DOCUMENT RESUME

ED 317 801 CE 054 611

AUTHOR Stefanov, Michael J.
TITLE New Technologies, Labour Organization, Qualification, Structures and Vocational Training in Bulgaria.
INSTITUTION European Centre for the Development of Vocational Training, Berlin (West Germany).
REPORT NO ISBN-92-826-1133-7
PUB DATE 90
NOTE 122p.; For a related document, see CE 054 612.
AVAILABLE FROM UNIPUB, 4661-F Assembly Drive, Lanham, MD 20706-4391 (Catalogue No. HX-58-90-126-EN-C: 7 European Currency Units).
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS *Delivery Systems; Educational Needs; *Educational Practices; *Educational Trends; Education Work Relationship; Employment Qualifications; Foreign Countries; Futures (of Society); *Job Training; Labor Force; Postsecondary Education; Secondary Education; *Technological Advancement; *Vocational Education
IDENTIFIERS *Bulgaria

ABSTRACT

This study describes the development, current status, perspectives, and basic problems of the Bulgarian vocational training system and the integration of young people in Bulgaria into working life. It is based on an analysis of regulatory documents, analytical publications, statistics, and sociological data. The report is organized in four sections. The first section profiles new technologies, labor organizations, qualification structures, and vocational training in Bulgaria, providing historical background. The second section describes the Bulgarian education system, including its structure, the relationship between education and scientific-technological progress, and the regulatory framework. Some of the programs described are full-time education, evening classes, unified secondary polytechnical school, specialized secondary vocational schools, specialized secondary vocational-technical schools, postsecondary vocational schools, enterprise-based courses, and vocational training centers, schools, and courses. Higher education is also described. The third section describes some specific features of the process of education and vocational training related to the introduction of new technologies in Bulgaria. Problem areas in education and vocational training are profiled in the final section, with special emphasis on organization, career choice, training, and use of new technologies. Institutions concerned with the management and research of vocational training in Bulgaria are listed. Forty-four references (endnotes) and 21 data tables are included. (KC)

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CEDEFOP Document

# New technologies, labour organization, qualification, structures and vocational training in Bulgaria

European Centre for the Development of Vocational Training

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CEDEFOP Document

New technologies, labour organization, qualification, structures and vocational training in Bulgaria

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First edition, Berlin 1990

*Published by:*

CEDEFOP — European Centre for the Development of Vocational Training
Jean Monnet House, Bundesallee 22, **D-1000 Berlin 15**
Tel. (0 30) 88 41 20; Telex 184 163 eucen d; Telefax (0 30) 88 41 22 22

The Centre was established by Regulation (EEC) No 337/75 of the Council of the European Communities

Cataloguing data can be found at the end of this publication

Luxembourg: Office for Official Publications of the European Communities, 1990

ISBN 92-826-1133-7

Catalogue number: HX-58-90-126-EN-C

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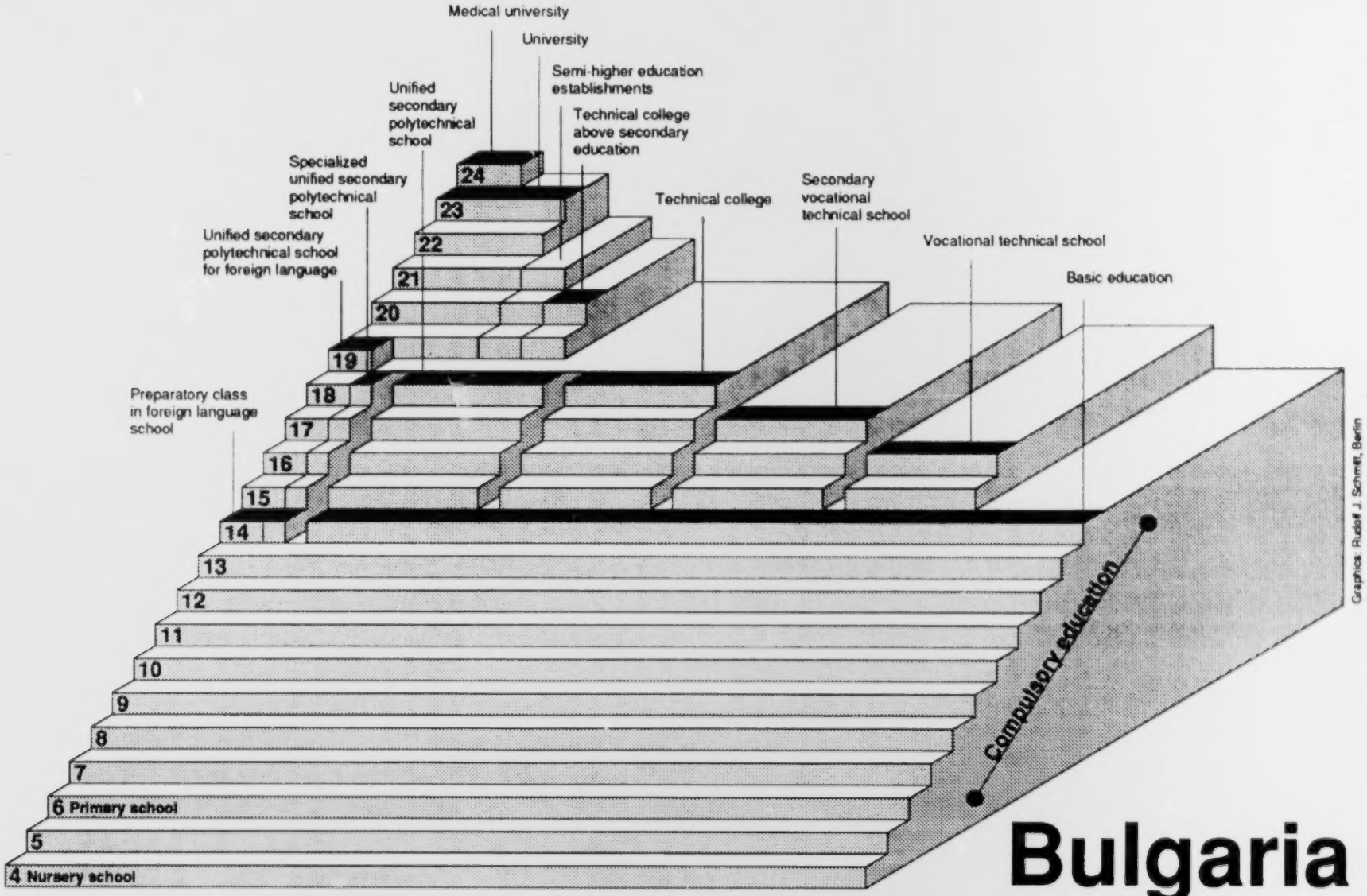
*Printed in Belgium*


Medical university
University
Semi-higher education establishments
Technical college above secondary education
Unified secondary polytechnical school
Specialized unified secondary polytechnical school
Unified secondary polytechnical school for foreign language
Technical college
Secondary vocational technical school
Vocational technical school
Basic education
Preparatory class in foreign language school
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6 Primary school
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4 Nursery school
Compulsory education
Graphics: Rudolf J. Schmitt, Berlin
Computer adaptation: Arsi Hunstock, Berlin

# Bulgaria

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## Introduction

In the last months of 1988, official relations between the European Community and individual east European countries had been established, crowning a long period of careful preparation. Before, individual EC countries had already entered bi-lateral agreements with east European countries, which sometimes also included issues of education and vocational training.

When CEDEFOP decided in 1988 to produce documentation on the vocational training systems of east European countries, nobody could have guessed that developments in these countries would be as radical as we witness them now. The initial idea indeed was quite modest: it was recognized how little we actually know about the state and developments in vocational training of east European countries in a period that has seen an increased interest for economic cooperation between them and the European community. The time had come, therefore, for CEDEFOP to contribute its share by closing some of the information gaps that existed. We hope that the present series of documentations on Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, and the Soviet Union will add something to a better understanding of these countries. The studies present the problems of vocational training in view of developments in technology, work organization and qualification structures. Some of the studies are quite critical in their analysis and they paint in certain respects a dramatic situation. In other respects, though, interesting initiatives have been developed which are worth closer examination by the parties concerned in west European countries.

However, there was not only a growing need for information (on both sides, as a matter of fact, proved by the numerous requests for information received from vocational training experts of the east European countries), but also a growing desire for people to get to know each other. Thus, through the production of these documents we have attempted to bring existing networks in both parts of Europe together. The authors of the studies are all leading personalities in important research institutions in their countries and they have meanwhile been invited to participate in CEDEFOP's annual Forum of Research Institutes. In collaboration with the European Institute for Vocational Training in Paris, and with some of the Hungarian research institutes, CEDEFOP will organize an East-West European conference on vocational training in Budapest (18-19 January, 1990) to extend the network to practitioners and policy-makers. The present studies will serve as background information for participants. Summaries of the studies will be published in a special issue of CEDEFOP's journal which appears in all 9 languages of the European Community. We expect that this is only the beginning of a more intensive cooperation between the countries of Europe.

At the Arche summit, held in Paris from 14 to 15 July, 1989 the leaders of 24 Western countries entrusted to the European Commission responsibility for the coordination of their assistance to Poland and Hungary. A special Task Force was created within the Commission which defined as one of its priority fields of action: vocational training and management education (Task Force PHARE, Poland and Hungary, Assistance for Economic Restructuring). Besides coordinating the assistance from the Group of 24, PHARE also had to develop aid programmes to be financed from the Commission's own budget. CEDEFOP has been involved in the work of PHARE in this field from the beginning. The documentation that had meanwhile become available and the various contacts made in both countries proved to be extremely useful in analyzing the major problems of the two countries with respect to their vocational training systems.

In November 1989, at the meeting of Heads of State and Governments of the EC Member States in Paris, it was suggested that EC assistance in the field of vocational training and education should concentrate on two major activities: the opening-up of existing exchange programmes for young people, and the development of a European Foundation for Training. While for the moment these action programmes are restricted to Poland and Hungary, it can be expected, given the radical developments that have and are taking place in the other countries of eastern Europe, that sooner or later their scope will be broadened. Against this background, CEDEFOP will continue to play its role as a platform for those involved in vocational training. With the further integration of Europe it will obviously have to weave in other European countries into its networks.

I am grateful to the authors for providing us with such valuable information. While for many readers this will probably be the first occasion to receive first-hand information, they will realize the common historical traditions and they will recognize the similarity of problems with which east European countries see themselves confronted. Perhaps they will even identify some of the solutions the eastern countries have developed. It is in a spirit of better mutual understanding and desire for intensive future cooperation that these reports have been written.

Peter Grootings
Coordinator

359/89
Michael J. Stefanov

# NEW TECHNOLOGIES, LABOUR ORGANIZATION, QUALIFICATION STRUCTURES AND VOCATIONAL TRAINING IN BULGARIA

The objective of this study is to describe the development, status quo, perspectives and basic problems of the Bulgarian vocational training system and the integration of young people in Bulgaria into working life on the basis of an analysis of regulatory documents, analytical publications, statistics and sociological data. It is not the author's aim to seek solutions in the sphere of theoretical generalizations by studying the practical experience of social policy in education and work. From this point of view, any references to scientific works or regulatory documents stemming from the state authorities and public political organizations serve merely to illustrate the socio-practical or research level achieved so far in the relevant public sphere. Within the limited framework of this study, it shall not be possible to provide an exhaustive analysis of the specific status of young people in the vocational training and labour system and related problems in this field. For this reason, the author shall merely emphasize the main issues which, he believes, shall provide the reader with a clear, if rather over-generalized picture of the functioning of the education and vocational training system in Bulgaria.

Historical_background

The institutional development of vocational education in Bulgaria began almost immediately after the establishment of the independent state of Bulgaria in 1878[1]. The first educational establishment as a vocational school was founded in Sofia in 1883; in 1893 it was declared the first State Technical School and later a "State Practical Smith's School" offering 3 years of vocational training. The second vocational was founded in 1905 in the city of Gabrovo for the training of specialists in occupations related to leather processing and knife manufacture. The first technical secondary school was set up in Sofia in 1911 for the training of construction mechanics and land-surveyors. The beginning of this century saw the foundation of the Naval Machine School and the special technical naval schools of the Bulgarian Naval Fleet in the city of Varna. A number of chambers of crafts and industry also established vocational technical schools of their own. This same period marked the emergence of private technical schools in a number of newly emerging professions. For example, the first electrical engineering school in Bulgaria was opened in 1908 as a private establishment. In 1915 it merged with the State Industrial Smith's School to found the first State Secondary Mechanical and Electrical Engineering School. According to historical analysis, private vocational education mainly concentrated on trade schools and vocational schools for girls. It is worth mentioning that soon after the creation

of the independent state of Bulgaria it was clearly realized that vocational training should not be the exclusive aim of the secondary vocational schools, but that these schools should provide more broadly-based general education. The Law on Public Education of 1909 stipulated that the State Secondary Technical School in Sofia schould "provide students with general education and train specialized assistant personnel for the different sectors of technology, industry and agriculture". The law also laid down provisions on the structure of schools training specialists in construction and communications, cultivation and forest technology, mechanical and electrical engineering and mining. Special regulations were also drafted for the occupations learnt at educational establishments. Due to the limited needs of the national economy, however, the total number of educational establishments and theose leaving these institutions remained limited.

The most important guidelines of national education policy in the aftermath of the Socialist Revolution of 1944 were stipulated in the Law on Public Education, adopted by the People's Assembly in 1948[2].This law laid down eleven years of general education and stipulated that pre-school education was an integral part of the education system. Evening, general and vocational educational establishments were opened for the first time in Bulgaria, a system of extramural and private education was created and special education centres were founded, providing shift workers with continuing education opportunities. After the

adoption of the law, educational establishments were built and opened on a massive scale in all towns and villages, triggering a swift increase in the number of students.

The higher education sector developed in a similar way. In 1944 there were seven higher educational establishments, only one of which was technical in its orientation; by 1953 their number had increased to 19, including seven higher technical schools with ten faculties and by 1987 our country was able to boast 30 higher schools, including 10 engineering schools with 24 faculties. In contemporary Bulgaria specialists are trained in 142 specialized fields and 156 professions requiring higher education with exception of establishments of higher educational catering for the arts.

In the light of the country's intensive economic development during the last 45 years, a lively debate arose regarding the quality of the vocational training imparted to the population. Following a series of studies and experiments, it was concluded that each secondary educational establishment should impart to its students not only a broadly-based general education, but also a certain degree of basic vocational education to facilitate their integration into working life, helping them cope more easily with the requirements of the sphere of public production. This approach was prompted by the targeted development of the forces of production as a result of the mass introduction of new technologies and highly sophisticated techniques in the process of production.

For this reason, a Decree of the Central Committee of the Bulgarian Communist Party and the Council of Ministers was published on 1 July 1957 establishing closer links between school and working life and in 1959 the People's Assembly adopted a law improving the links between school and working life and on the further development of public education[3]. This law aimed at the provision of higher-quality teaching, instruction in the basics of the various sciences, the introduction of polytechnical methods in schools of general education, a general improvement in the overall vocational education system and the creation of framework conditions to forge closer links between general and vocational education in accordance with the new demands on society and the individual stemming from the revolution in science and technology.

In 1973 a number of changes were introduced to the education system and the foundations were laid for the new Unified Secondary Polytechnical School.

Changes of particular significance were introduced to the education system in the wake of the Plenary of the Central Committee of the Bulgarian Communist Party in July 1979, which adopted "theses for the development of education in the country."[4]. Important decisions in this direction are to be found in the records of the First Congress on Public Education, the Charter of the Bulgarian Teacher and the Popular Programme for the Development of Education in the People's Republic of Bulgaria.

The main objective of all these documents was to bring the structure of the education system and the content and organization of the process of education into line with the new stage of development of new production technologies and scientific progress.

This objective was also applied to the reform of the educational system implemented in Bulgaria which essentially affected all fields of education, i.e. both general and vocational education. As a result of the reform, the new Unified Secondary Polytechnical School was established with the following levels:

Level I providing broadly-based general, ideological, cultural, physical, etc. education over a period of 10 years (1st - 10th class);

Level II imparting general technical knowledge, gradually leading students into the real process of production; it lasts one year (11th class);

Level III providing specific vocational training, culminating in entry into the actual process of production; it also lasts one year (12th class).

The following shall give a detailed description of each element of the general education and vocational training system, as well as its different forms, full-time, extramural, evening, etc.

## II. THE BULGARIAN EDUCATION SYSTEM . STRUCTURE. RELATIONSHIP BETWEEN EDUCATION AND THE SCIENTIFIC AND TECHNOLOGICAL PROGRESS. REGULATORY FRAMEWORK

### 1. General

The Bulgarian education system is based on a number of general principles reflecting the attitude of the state towards this walk of public life[5].

Education is secular and a constitutional right of each citizen of the country regardless of his sex, nationality or race. Educational establishments are owned by the state which establishes and maintains the necessary types and levels of educational establishments, grants scholarships, etc. to guarantee the citizen's right to education. (See Table 2).

Education and vocational qualifications in Bulgaria may be acquired through the following types of training: full-time, extramural or evening classes.

### A. Full-time education

Primary education (1st - 8th class), is gratuitous and compulsory for all children of Bulgarian citizens aged 6-16[6]. Primary education is generally provided by the primary streams of Grade I of the United Secondary Polytechnical Schools or in primary schools (in places

where the opening of a USPS is not objectively viable, i.e. mainly in villages). It aims at providing pupils with general education and general technical knowledge, laying the foundations of their moral, physical and aesthetic education, fostering working attitudes and preparing them for the subsequent stages of the education system. During their primary schooling, children and young people participate in work activities which are appropriate for their age-group and socially beneficial. After completing the 8th class, at the age of 16, about 95 % of young people (1987/1988 academic year) continue their education at different types of establishments of secondary education, while the rest opt for the world of work. Special regulations on the employment of young workers aged 16-18 provide for reduced working activities and social benefits. Successful primary school-leavers are awarded a certificate of primary education, giving access to higher level educational establishments.

Secondary education comprises two basic streams: general secondary education and vocational/technical secondary education.

General secondary education is imparted to young people who have successfully completed levels I-III of the Unified Secondary Polytechnical School or specialized schools (e.g. schools of languages, mathematics, biology, etc.). It extends from the 9th to the 12th class (for the majority of the specialized schools from the 8th to the

12th class). Secondary general polytechnical education in fact consists of two levels: the 9th and 10th classes, in which young people acquire a wide general education (Grade I) and the 9th-12th classes (Grades II-III) which basically provide theoretical and practical vocational training, familiarizing students with modern technologies. Holders of a secondary education leaving certificate may apply to any form of establishment of higher education in the country.

Secondary vocational/technical education is acquired after successful completion of a secondary vocational/technical school or a specialized secondary school (vocational schools). Specialized secondary schools (vocational schools) provide specialized secondary education (e.g. technical, economic, agricultural, etc.). These establishments of secondary education provide the students with general education, general technical and specialized training, a technician's qualification in the corresponding field of specialization and a vocational qualification in a given occupation.

The secondary vocational/technical schools provide secondary education and a qualification in a given occupation for the specific sectors of the economy.

Vocational/technical training lasts four to five years following primary education and one to three years following secondary education. Secondary vocational/

/technical education provides students with scientific and technical training, fosters working attitudes and technical skills in certain occupations and provides a standard of general education approximately equal to the knowledge acquired at the Unified Secondary Polytechnical School. Successful final-year students receive a certificate of secondary education and a technician's diploma in the corresponding occupational field.

Young people with secondary vocational/technical education may apply to any establishment of higher education in the country.

There are also vocational/technical schools in which young people do not acquire secondary education (according to the certificate) but only a skilled worker's qualification in a specific occupation. This cycle lasts two years. Those leaving such types of school have no access to higher education.

Higher education[7] imparts the highest standard of initial vocational training to those working in all spheres of public life. Courses at the various establishments of higher education last from four to six years. Training of specialists at higher education level is conducted in establishments of higher education, Unified Centres for Science and Personnel Training, Academies of Scientific Education and other educational institutions, as determined by the Council of Ministers. After graduating

from the institute of higher education with a pass in the state examinations and/or the submission of a dissertation, the young person acquires a corresponding professional title (engineer, physician, agronomist, etc.).

B. Extramural_education_and_evening_classes

All types of secondary education (general/polytechnical, secondary vocational/technical and specialized secondary) and higher education may also be acquired without leaving the production process in the framework of extramural education and evening classes. The educational route followed does not influence a person's working opportunities or social perspectives. With a view to providing better conditions for an increase in the educational and qualificational standards of the citizens, the country's network of evening schools has been

and standard of the education of young people entering the labour process without any preliminary vocational training - usually after completing primary education or dropping out of secondary education. Young people who finish their education after completing primary level are admitted to courses and other schemes organized by the enterprises in order to improve their general vocational education and give them basic vocational training. Such young people may attend separate schools.

Primary and secondary general or vocational/technical education may be acquired extramurally by the following groups aged 16 + : workers or administrative officers, mothers/housewives, young people who have forfeited the right to study in the upper level of full-time and evening secondary polytechnical schools (provided they continue working and have at least one year of working experience) and young men who have completed their military service. Extramural education is implemented according to a special educational plan. Extramural students are prepared for their examinations in the form of courses, consultation and self-preparation.

Evening general education covers the 4th - 11th class of the general educational system, while evening vocational/technical education the 1st - 4th courses. Evening schools may be attended by persons aged 16 + who are workers, administrative officers or mothers/housewives. Young people below the age of 16 may

be accepted in exceptional cases if they have fallen behind their peers by more than three years in their academic achievement. Persons who have forfeited the right to study at full-time (day) schools are also eligible for admission to evening schools, provided that they have subsequently worked for at least one year. Transfers from day to evening schools are only permitted in exceptional cases in which the student has started working. Day students who get married may enrol in extramural or evening classes within a period of 20 days after leaving school, provided that they undertake to start working within a period of up to three months.

Young people may also acquire education and vocational training as private students. This means self-preparation and taking exams in subjects studied in a certain class or course. Private students at the Unified Secondary Polytechnical Schools have the right to be in full-time employment or mothers/housewives. Private students at the secondary vocational/technical schools should work in the speciality for which they apply and should also have a certain period of work experience in the relevant occupation. In the case of vocational schools, this period of work experience is two years for primary school-leavers (8th class) and one year for general secondary school-leavers.

## 2. Specific Characteristics of the Educational Process and Vocational Training in the Regular Educational Establishments of the General Education System

### A. Unified Secondary Polytechnical School

This school covers the entire process of education of a young person, ranging from the 1st to the 12th class, i.e. age 6-16. Legislation meanwhile stipulates that these schools - according to the prevailing conditions - should be divided as follows: elementary (1st-3rd class), primary (1st-8th class), secondary (1st-12th or 4th-12th class) and grammar school (9th-12th or 8th-12th class). Primary schools may be opened and closed by the Executive Committees of the Regional People's Councils while secondary schools may be established by the Ministry of Culture, Science and Education upon proposals from the Regional People's Councils. Compulsory education is also imparted at the elementary (1st-3rd class) and primary (4th-8th class) levels of these educational establishments[8]. In 1988 there were a total of 3 489 educational establishments in the country, 732 of these catering for the 1st-3rd class, 44 from the 4th-8th class, 2 159 from the 1st-8th class, 72 from the 9th-12th class and 482 from the 1st-12th class. Basic education at the Unified Secondary Polytechnical Schools and primary schools (4th-8th class) catered for 679 677 students in the academic year 1987/88.

Young people who have successfully completed the 8th class, are under 17 years of age and unmarried are eligible for access to the upper level of the Unified Secondary Polytechnical School (9th-12th class). They are accepted on a regional basis according to specifications defined by Regional Public Education Councils (municipal public education councils) regardless of their primary school leaving certificate results (8th class). Secondary school students may only repeat one class in the course of their education.

Besides full-time Unified Secondary Polytechnical Schools, other types of school have been opened, e.g. health, sanatorium and spa schools, special schools for the physically or mentally handicapped and all-day schools (semi-boarding schools). These schools use special curricula approved by the Ministry of Culture, Science and Education. In 1988, the upper level of the Unified Secondary Polytechnical School (9th-12th class) had 167 845 students, representing 40 % of all learners in secondary education (see Table 2).

It should be pointed out that there are some secondary schools which admit students after the 8th class, i.e. language schools, the National School of Natural Sciences and Mathematics, sports schools, the National Secondary School of Culture, Unified Secondary Polytechnical Schools with a natural science/mathematics leaning, etc. Moreover

the process of education in the language schools is extended by one year, i.e. by the preparatory class when the basic school subject is the respective foreign language[9]. In the academic year 1987/88 there were 40 foreign language schools in Bulgaria, attended by 19 382 students. These 40 schools included 19 Russian language schools with 4 616 students, 7 English language schools with 5 268 students, 5 French language schools with 4 682 students, 7 German language schools with 4 387 students, one Spanish language school with 162 students and the National School for Ancient Languages and Culture with 267 students. These secondary schools have introduced higher application and entrance requirements.

For example, applicants to the National School of Natural Sciences and Mathematics must have the average mark "very good (5)" in their 8th class certificate (in Bulgaria there is a six-point marking system). They should also have obtained very good marks in mathematics in their primary education diploma for the main subject of mathematics, in physics for the main subject of physics, in chemistry for the main subject of chemistry, in biology for the main subject of biology and biotechnology and in geography for the main subject "Sciences of the Earth". Similar requirements - with reference to other subjects - are also applied by the National Secondary School of Culture, language schools, etc.

As a rule, admission is based on a competitive examination in subjects defined in advance according to the profile of a secondary educational establishment.

For example the National School of Natural Sciences and Mathematics stipulates two competitive examinations: a written examination in mathematics for all specialized fields and further written examinations in a subject which is most closely linked to the specific speciality (mathematics, physics, chemistry, biology, geography).

Classification of candidates is carried out according to a rating system formed by the average mark in the primary certificate (following the 8th class), the mark from the first written competitive examination, twice the mark from the second written competitive examination and the mark from the primary certificate in the subject most closely related to the main subject to be studied.

Education at the secondary specialized art schools[10] lasts five years. These schools admit students who have completed the 8th class, following entrance examinations which differ according to the respective specialized field of study.

Those who have successfully completed the 11th (12th) class of the Unified Secondary Polytechnical School take a graduation examination which gives them a graduation

certificate. Students who have completed the 11th (12th) class but do not wish to take a graduation examination or fail this examination, merely receive a certificate at the level of the class completed.

1982 marked the foundation of Inter-School Centres for Vocational and Polytechnical Training in the first grade of the Unified Secondary Polytechnical School (1st -10th class)[11]. The most important tasks of these centres include the imparting of vocational training and general technical knowledge, the fostering of skills and attitudes and the training of young people in skills required by the modern process of production, itself based on the practical implementation of the achievements of technological progress.

The Inter-School Centres are established by the Regional Councils for Public Education following the decision of the Executive Committee of the respective People's Councils, in conjunction with the Ministry of Culture, Science and Education. These Centres may have affiliated branches of vocational and polytechnical training in the catchment area of the respective municipality for 4th and 8th class students and polytechnical production streams for 9th and 10th class students. These Centres are administered by the Regional Council for People's Education. The Council determines the educational establishments whose students study at the Centre.

The vocational guidance of children and young people is also concentrated at this level. Methodological guidance units function in the framework of these Centres which work in the following main fields:

- the organization and implementation of the overall vocational orientation of students from the Inter-School centres;
- the provision of information for the educational establishments in a given region on the manpower requirements of industrial enterprises and agricultural production units, as well as information on job vacancies;
- the organization of the vocational guidance of students and their parents along with their teachers, according to a definite schedule;
- in conjunction with teachers and representatives of the youth organization, the elaboration of records and recommendations for the students of the 8th and 10th classes with data for their orientation towards a certain sector of production, a widely-based occupational profile and a specific field of specialization;
- the systematization and dissemination of the most recent scientific and practical achievements in the sphere of the vocational orientation of young people.

Educational workshops, shops, cabinets and laboratories for labour and polytechnical training function within the framework of the Inter-School Centres.

A number of economic organizations also contribute to the establishment of Inter-School Centres by providing the necessary salaries/wages of the workers, experts and specialists involved in the training of the students. Upon completion of the 10th class, those leaving these Centres have acquired broadly-based training which they can build upon in Grades I and III of the Unified Secondary Polytechnical School.

Training in Grades I and III of the USPS consists of compulsory, eligible and optional elements aimed at familiarization with new technologies used on-the-job.

a) Obligatory courses comprise general education and vocational training in the broadly-based occupational profile and field of specialization in question.

General education offers a higher level of theoretical knowledge and provides the link between acquired knowledge and practice, approaching the basics of contemporary production and new production technologies from a more sophisticated technical angle. Vocational Training[12] is classified in line with the degree of social maturity of the young person according to three hierarchical levels:

First level: general education offering access to training in each occupation offered, i.e. including general education in technology, economics and labour psychology;

- general technical training imparting knowledge in the fields of electricity, electronics, automation, etc.;

- general economic training imparting knowledge of the organization of production, different forms of the process of economic reproduction, etc,;

- labour psychology training imparting knowledge in the field of vocational ethics and social psychology, labour legislation, work psychology and physiology, industrial aesthetics, etc.

Second level: technological, technical, organizational and management basics of broadly-based occupational fields; at this level information is systematically presented according to the characteristics of each occupation.

Third level: knowledge related to the specific technological, technical, organizational and managerial characteristics of the occupation or specialized field in question with special reference to the new techniques and modern technologies applied in actual on-the-job activities.

b) So-called "eligible" courses comprise basic subjects of general education; they are governed by the curricula adopted by the Ministry of Culture, Science and Education and implemented by dividing students into groups for the different subjects. The main objective is to enable students to further their specialized training in fields

corresponding to their individual skills, abilities and talents, to promote their vocational guidance and vocational training, to facilitate and accelerate the development of especially gifted students and to enable them to complete secondary educaton more quickly.

c) Optional courses aim at ensuring scientific and practical training in the sphere related to the individual's specific interests and abilities. These courses are geared towards expanding the student's knowledge in a given field by complementing and extending his general compulsory training and building up his knowledge and abilities in fields more specifically related to the subject under study; they try to arouse a lasting interest on the part of students in the subject under study and to develop their sense of independence, promoting their propensity for self-education.

Each optional course may be offered in the framework of one, two or four school terms with two hours weekly, i.e. 32-34, 64-68 or 128-136 academic hours in total.

Grade III vocational training takes place in educational/vocational training centres[13] which are in fact educational units specialized in training in certain vocational fields. At this level, students acquire a qualification in the occupation in question in the framework of work experience in the process of production or activities outside the production field as working students or trainees.

Vocational specialization is carried out in:

- workplaces and positions in the production process and activities outside the production field;

- work experience in vocational training/production centres for specialization within certain enterprises for workers' training;

- traineeship places in the existing vocational training/production units within certain enterprises for the needs of secondary vocational/technical schools, vocational schools and vocational/educational centres.

The length required to obtain specialized training and the nature of work depend on the technical complexity of the speciality as well as on the level of the relevant new production methods and technologies applied.

Students are remunerated for their work during the training period.

All expenses for theoretical education are covered by the educational establishments, regardless of where such schemes take place.

The management boards of the secondary educational establishments and the enterprises or institutions where

students acquire their practical training are responsible for the quality of students' vocational training.

Various educational/vocational training centres throughout the country provided vocational training in the following vocational fields in the academic year 1987/88: mining, metalworking, the energy sector, engineering, mechanical engineering, electrical engineering and electronics, the chemical industry, construction, agriculture, forestry and wood-processing, the food, wine and tobacco industries, light industry, trade, public catering, services, health, management and administration (see Table 3).

Specialized vocational training provides knowledge related to the scientific/technical bases of the process of production in a certain area. Differentiation is applied here according to the particular training occupation. Students become acquainted with sophisticated technical methods, new technological processes, (raw) materials utilized, ready-made production, work organization, industrial protection, health and aesthetics. Training in interdisciplinary skills and further training are also catered for as necessary[14].Direct management of training is in the hands of a teacher (an engineer, agronomist, economist, etc.) in charge of the classroom education. an instructor (specialist or experts from industry) for theoretical training or a highly skilled worker from the relevant training enterprise.

Since the beginning of 1988, secondary and higher educational establishments in Sofia have been experimenting with a new form of organization of the educational/vocational training process in the framework of educational qualification centres[15], the aim being to improve the quality of training in the field of new technologies. These centres are voluntary associations of institutions providing vocational training to young people (Unified Secondary Polytechnical Schools and educational/vocational centres, secondary vocational/technical schools, vocational schools and higher education establishments) on the one hand and entities which are "consumers" of personnel (enterprises, factories, economic units, institutes, etc.) on the other. The activities of these associations which are financially self-supporting are based on existing economic legislation with the objective of preparing personnel for specific clearly-defined occupational tasks.

These educational qualification centres function as follows: the "consumer" organization submits young people information on its manpower requirements and job vacancies. A specific candidate chooses a job, applies for this position and begins to prepare for this particular workplace. Once he has completed his vocational training, the employer organization is obliged to offer him this job. The young person may be granted a scholarship to cover his period of training. The targeted admission of students is possible when young people have proved their

abilities in a certain specialized field regardless of their diploma results.

Eight educational qualification centres (associations) already exist, mainly linked to those sectors which are introducing modern production technologies on a large scale, i.e. metalworking, agriculture, complex mechanical engineering automation, biotechnology and the chemical industry, transport, agricultural and construction equipment, information and communication systems, trade, public transport and economics.

Vocational training courses at the Unified Secondary Polytechnical Schools

The entrance requirement for these courses is vocational training in a given occupation. Candidates may not have completed Grade I of the Unified Secondary Polytechnical School (10th class) or be in employment. These courses may also cater for young people who have not completed the 8th or another class of secondary school, provided they are aged 16 + and are not subject to compulsory military service.

With a view to providing these young people with future career prospects, public education authorities and the management of the Unified Secondary Polytechnical Schools are obliged to find and offer guidance to all boys and girls who drop out of their education at Grade I of the

Unified Secondary Polytechnical Schools and are out of work.

Planning concerning the number of young people such courses should cater for is conducted on the basis of statistics. Occupations for which training is to be offered are determined according to the demand for cadres. Vocational training courses are offered at the Unified Secondary Polytechnical Schools at levels II and III, secondary vocational/technical schools and vocational schools without any restrictions being applied.

B. Specialized_Secondary_Schools/Vocational_Schools

These educational establishments admit young people who have completed the 7th or 8th class of the Unified Secondary Polytechnical School or have passed the USPS leaving certificate. Candidates for vocational schools after the 8th class must be aged 16 + 16. The courses end with a state examination which includes a dissertation and examinations in given subjects or a state examination in certain subjects only.

The number of young people admitted is determined by a plan adopted by the Minister of Culture, Science and Education. The plan is specified according to region, fields of specialization, sex and numbers. This fact determines the selective approach: the numbers of candidates are usually larger than the capacities of the

educational establishments and the public need for cadres with such levels of qualifications. Candidates for these vocational schools must have obtained an average of at least "very good" (5.00) in their diploma of primary education.

Students are generally admitted following a competitive examination. Entrance examinations vary according to the type of educational establishment in question.

For example, the entrance examination is in mathematics for vocational schools teaching electrical engineering, robotics, electronics, lazer technology, automation, energetics, fine mechanics and optics, shipbuilding, construction, motor transport, economics, trade, etc., in chemistry for schools teaching biotechnological synthesis and technologies for the protection and purification of the air and waters and in drawing for interior design and furnishing, ceramic and glass decoration, artistic arrangement and textile material design and the manufacture of artistic articles from rock and wood-carving.

Classification of candidates who have passed all the entrance examinations is carried out on a rating system based on the sum total of the overall marks from the educational certificate plus twice the mark from the entrance examination and the mark for the basic subject of specialization in the certificate. This subject of general

education most closely related to the specialized field of study is called the "basic subject of specialization". For example, physics is the basic subject for calculating the rating of candidates for the vocational schools and occupations in the following fields: geology, the energy sector, mechanical and appliance engineering, construction, transport, etc.

In vocational schools without entrance examinations, the classification of candidates is performed on the basis of a rating system based on all the candidate's marks from the educational certificate, his marks in Bulgarian language and mathematics from the certificate, plus his marks in the basic subject of specialization, as explained above.

In their final year and according to the number of pupils planned, students who have successfully completed the 7th class of the Unified Secondary Polytechnical Schools may apply to the vocational schools of microprocessing techniques at the Educational Qualification Technological Centre on Microprocessing Techniques and Technologies in the town of Pravetz which is incorporated into the Higher Institute of Electrical Engineering Institute in Sofia. In this case classification is performed on a rating system based on the sum total of the candidate's overall marks from the 7th class certificate plus twice his marks in mathematics and physics in the entrance examination.

The country currently has a total of 220 vocational schools for full-time education with 2 795 clasrooms and 92 321 places, 1 739 cabinets, 1 146 workshops, 482 laboratories, 194 sports halls and 9 512 teachers. These establishments catered for 81 402 students in academic year 1987/88 (see Tables 4 and 5).

In the same academic year, 40 667 people entered the first year of study in different forms of education as follows: following completion of the 7th class of the Unified Secondary Polytechnical School, 1 143 students or 2,8 % of newly admitted students; following the 8th class of the Unified Secondary Polytechnical School, 21 272 students (52,3 %); following the 11th class of the USPS 10 857 students (26,7 %) and after leaving the Unified Secondary Polytechnical School, 7 387 students (18.2 %).

The sex structure of the students at this type of educational establishment shows a general predominance of young men (57 % : 43 %). In fact the male/female ratio varies in the different types of education. In the case of full-time education, it stands at 59 % : 41 %, for evening courses it is 72 % : 29 % and in the case of extrmural education it stands at 45 % : 55 %.

The sex structure of vocational school leavers in 1988 may give a certain indication of sex ratios in recent years: the male/female ratio was 52 % : 48 % and, more specifically, in full-time education 56 % : 44 %, evening 63 % : 37 % and extramural 33 % : 67 %. These statistics

illustrate that many more women opt for extramural education, i.e. without leaving the process of production, than men.

Vocational school leavers may occupy positions which require specialized secondary education. In general terms, they perform the following basic groups of activities:
- organizational and management functions of local leaders;
- project and design, technological and other activities in the field of the development and implementation of scientific and technical achievements at the level of an occupation;
- regulatory and controlling activities related to labour discipline, work expenditure, energy and materials, industrial safety, environmental protection, etc.;
- highly qualified activities connected with services requiring intellectual work and a high degree of independence.

The specialist with technical secondary education may enter e.g. the following occupations:
- immediate work organizer and technical leader who follows up the required parameters and regimes as well as the rational fulfilment of work tasks;
- engineer's assistant who solves particular general engineering problems, carries out technical and scientific tasks, prepares documentation, experimental data and other components of the technological process, promotes the implementation of new methods, systems and technologies in

the production process under the supervision of engineers or other specialists with higher education;
- immediate performer of operations, requiring certain theoretical training and occupational skills, e.g. regulation and adjustment of devices, automated mechanisms and systems.

In other words, the young person with a vocational qualification from a vocational school is representative of the growing public demand for knowledge and skills corresponding to the present status of the revolution in science and technology in the country.

C. Post-secondary Vocational Schools

With the aim of achieving a higher degree of quality in the training of secondary technical personnel to work with the new methods and modern technologies, a series of vocational schools, functionally integrated into a number of higher educational establishments, were opened in 1986. Nine educational establishments of this type offering two-year courses[17] are so far in operation in the following fields:
- mechanical and electrical engineering in Sofia, integrated into the Higher Mechanical and Electrical Engineering Institute (HMEI), Sofia;
- mechanical and electrical engineering in Plovdiv, integrated into the HMEI, Sofia;

- mechanical and electrical engineering in Blagoevgrad,integrated into the HMEI, Sofia;
- biotechnology in Razgrad, integrated into the Higher Chemical and Technological Institute, Sofia;
- mechanical and electrical engineering in Silistra, integrated into the HMEI, Sofia;
- economics and management in Svishtov, integrated into the Higher Institute of Finance and Economics, Sofia;
- nuclear energy in Kozloduy, integrated into the HMEI, Sofia;
- mechanical electrical engineering in Bourgas, integrated into the HMEI, Sofia;
- chemical technology and biotechnology in Sofia, integrated into the HMEI, Sofia.

Candidates for these vocational schools must meet the following requirements: they must have completed secondary education, be aged under 35 years, have a certain amount of work experience and be in employment at the time when they sit the entrance examination.

The requirement concerning work experience does not apply to the following categories of young people: those under 18, those who have left a day secondary school in the year of application, expectant mothers and mothers of children up to the age of 6, young men in military service but awaiting discharge in the year of application, as well as some groups of disabled people. Foreign citizens living in Bulgaria are also admitted to vocational schools.

Admission is performed on the basis of entrance examinations in social science and one special subject (mathematics, chemistry, history, geography or social science), depending on the profile of the vocational school. The rating system is based on the sum total of the overall marks in the secondary school diploma, plus twice the candidate's marks in the entrance examination and the marks of two subjects from the secondary school certificate, depending on the different profiles and fields of specialization of the schools involved.

The introduction of post-secondary vocational schools with their structure and educational objectives illustrates a new stage in the development of the Bulgarian vocational training system. The introduction of new technologies into the production process, the emergence of hitherto unknown spheres of activity, the specialization of the Bulgarian economy in several strategic directions closely related to scientific and technical progress (electronics, biotechnology, new materials manufacture, nuclear energy) triggered off the question of the quality and quantity of manpower in these fields of production. The functional integration of the scientific and material potential of higher educational establishments offers better opportunities for the achievement of a very high professional level of middle management training, familiarizing these cadres with the latest state of the art in science and technology and consequently building up a manpower reserve in a better position to respond to future developments in new production technologies.

D. Secondary_vocational/technical_schools

These educational establishments train qualified workers with a secondary education by giving them general education, general technical and specialized preparation and qualifying them in a given occupation. Candidates should have successfully completed the 8th class of the Unified Secondary Polytechnical School and must not be above the age of 17. The selection of candidates is carried out on the basis of a rating system taking account of the overall marks of the primary school certificate plus marks in Bulgarian language and mathematics and the basic subject for the respective occupation from the same certificate.

Regular courses catered for 105 455 young people in 1988 which represents 99 % of all students in the secondary vocational/technical schools. The main fields of teaching were mining, energy, metalworking, mechanical engineering, electrical engineering and electronics, the chemical industry, forestry and wood-processing, the food, wine and tobacco industries, light industry, trade, catering, services, transport, construction and agriculture (see Tables 6 and 7).

A limited number of young people are admitted to extramural courses for the following specialities: mechanical engineering, electrical engineering and electronics, transport, agriculture, light industry,

trade, public catering and services. Evening education also admits a limited quota of young people for the specialities mechanical engineering, forestry and wood-processing.

There are currently 261 secondary vocational/technical schools in the country with 1 925 classrooms, 62 836 places, 1 325 cabinets, 1 327 workshops, 147 laboratories, 195 sports halls and 7 406 teachers. Of the total number of 106 563 students in 1988, 33 910 (32 %) were women. Regular courses catered for 105 455 students, 33 415 (i.e. 32 %) of whom were women, extramural courses 850 students 480 (i.e. 57 %) of whom were women and evening courses 259 students, 15 (i.e. 6 %) of whom were women.

The total number of leavers in the same year stood at 35 566 students, 11 623 (i.e. 33 %) of whom were women.

E. Vocational/technical Schools

Candidates for vocational/technical schools should have completed the 8th class of the Unified Secondary Polytechnical School and should not be older than 17. Students who have not completed primary education may be admitted under exceptional circumstances. Candidates are graded on the basis of a weighting system formed by the sum total of the total marks from the primary school certificate plus the marks in Bulgarian language, mathematics and the basic subject for the respective

occupation. It can be observed that the total number of students at this type of school has remained virtually constant in recent years (see Table 8). The main economic sectors for training at these educational establishments are mechanical engineering, forestry, light industry, trade, public catering and services, construction and agriculture.

Successful vocational/technical school-leavers obtain a certificate stipulating a specific qualification. Those who received no primary education before entering secondary level are awarded a certificate of primary education and a further diploma showing their qualification and vocational training. Vocational/technical school-leavers may work as skilled workers in the occupation in which they received training, their grades being recognized without any additional examinations. They can moreover continue their education at secondary vocational/technical schools and vocational schools as follows:

- vocational/technical school-leavers can be admitted to the 8th class - either at evening courses at secondary vocational/technical schools, extramurally following a special curricula at the same type of school, or as private students. They can also be accepted as full-time, extramural or private students at vocational schools with no recognition of the subjects studies in the vocational/technical school;

- vocational/technical school-leavers with a primary 7th class education may only continue their education at one of the above mentioned vocational secondary schools upon completion of the 8th class of the Unified Secondary Polytechnical School;

- vocational/technical school-leavers who had previously received no primary education and are now awarded a certificate of primary education plus a qualification may continue their education as evening, extramural or private students at all educational establishments after the 8th class, regardless of the occupation acquired in the vocational/technical school.

Bulgaria currently has three vocational/technical schools with 51 teachers and 1 343 students.

3. Education without opting out of the process of production

All forms of evening and extramural, as well as private (self-) education at Unified Secondary Polytechnical Schools, secondary vocational/technical schools and vocational schools admit students who work in the production process and the administration, are temporarily disabled, have been discharged from work, soldiers due to be discharged, Bulgarians temporarily living abroad, expectant mothers or mothers/housewives with children in their care.

Education in formulae which do not require the student to opt out of production is organized and implemented at all secondary educational establishments with no restrictions, under the proviso that there are the necessary minimum number of candiates for one class.

General secondary education without leaving the production process may be received at evening Unified Secondary Polytechnical Schools. In 1988 there were 23 independent evening schools with a total of 4 548 students and 173 teachers in Bulgaria. Extramural (or private) students numbered 174. Enterprise-based courses are also organized with the methodical guidance of the schools. Workers from all occupations who have not completed the 1st-4th class of the primary school study at primary schools or in the primary streams of Unified Secondary Polytechnical Schools. Unified Secondary Polytechnical Schools admit workers with primary education for training in occupations at the respective educational qualification centres.

Secondary vocational/technical education without leaving the production process may be obtained at extramural or evening vocational schools and secondary vocational/technical schools as well as in enterprise-based courses. The characteristics of the latter shall be examined below.

A. Secondary_vocational/technical_schools_and_vocational schools_without_leaving_the_production_process

These educational establishments may admit persons working on-the-job in the field of specialization in which they wish to train.

Persons who have successfully completed the 7th and 8th classes (with primary education) are eligible for admission to such schools.

Vocational schools admitting secondary school-leavers also require candidates to be specifically recommended by the institutions in which they work.

USPS leavers with secondary certificates are eligible if they exercise the occupation/field of specialization in which they wish to train.

USPS leavers who are holders of a secondary school certificate and a vocational training diploma and secondary vocational/technical school-leavers may be candidates for a specialized field corresponding to the occupation acquired without a preliminary year of on-the-job work experience.

Those leaving one type of vocational school may only study at another type as extramural or private students with equivalent examinations if they have worked for three

years in the relevant field of specialization and are still working in the field in they wish to train.

USPS and SPTS leavers with secondary certificates and a vocational qualification in one occupation/field of specialization may study a different specialized field at a vocational school, provided they work in this specific field.

Extramural education at vocational schools is offered in all the occupational fields included in the syllabuses of these educational establishments with the exception of geology, the technology of construction ceramics, the health services, physical education and the arts. In the academic year 1987/88 this form of vocational training catered for 20 194 people (55 % of whom were women) (see Tables 9 and 10).

Extramural and evening forms of education are also offered at post-secondary vocational schools. Candidates should not only have completed secondary education, but should also be below 40 years of age with at least one year of work experience and be recommended by the institution where they work. In this case selection is based on entrance examinations in a special subject according to the field of specialization studied. Assessment is exclusively based on entrance examination results.

There are eight evening vocational schools in the country catering for the following specializations: mechanical engineering, electrical engineering, energy and automation, clothing, construction and plants, transport and economics. There are 199 teachers and 10 013 students (28.5 % women) at these schools (see Tables 11 and 12).

Extramural educational secondary vocational/technical schools is offered in the following vocational fields: mechanical engineering and metal processing, electro-mechanical and electrical appliance engineering, textile production, construction, public catering, industrial and energy-related assembly, transport and communication, agricultural production, mechanization of agriculture. The various vocational courses offered in the academic year 1987/88 catered for 850 people, 480, i.e. 56 %, of whom were women (see Table 13). Evening classes at the same type of school are only offered in the following occupational fields: mechanical engineering and metal processing, industrial and energy-related assembly and forestry and wood-processing,. 259 people are currently studying in this form (6 % women).

B. Enterprise-based courses

Attendance at enterprise-based courses does not involve interruption of the production process, permitting workers who have not completed primary or secondary education to raise their educational standards to the level of the secondary vocational/technical school (see Table 14).

These courses may be differentiated according to the following groups:

Group I: workers from all occupations, regardless of their qualification and length of work experience who have not completed 1st-3rd class of primary school. The education process lasts one academic year and aims at imparting knowledge corresponding to 3rd class standard.

Group IIa: workers from all occupations, regardless of their qualification and length of work experience who have completed the 4th or 5th class of primary school. The education process lasts two academic years and aims at providing participants with complete primary education, i.e. the 8th class.

Group IIb: workers who have completed the 6th or 7th class. Education lasts one year and aims at providing them with primary education, i.e. 8th class.

Group__III: workers with primary education. In this case, the courses are vocationally-oriented and technical, aiming at providing participants with the standards of knowledge and skills provided by the vocational/technical schools.

Group__IVa: workers with at least three years of work experience having completed the 8th and 9th classes of the USPS, the 1st or 2nd class of the vocational/technical school or the 1st class of the vocational school. Education lasts two academic years and aims at providing general educational and vocational/technical knowledge and skills at the level of full secondary vocational/technical school training in the respective occupation.

Group_IVb: workers with at least three years of work experience, having completed the 10th class of the USPS or the 2nd class of a secondary vocational/technical school or 2nd/3rd class of a vocational school. Education lasts one academic year and aims at providing general educational and vocational/technical knowledge and skills at the level of full secondary vocational/technical school education.

Enterprise-based courses are established by the Public Education Departments of the Regional People's Councils and are organized and administered by schools determined by the latter body as follows:

Groups I and II courses: by a primary or Unified Secondary Polytechnical School;
Group III courses: by a vocational/technical school;
Group IV courses: by a secondary vocational/technical school or vocational school.

Students are recruited and recommended by the management of their respective enterprise.

C. Vocational_Training_Centres,_Schools_and_Courses

These provide vocational preparation schemes for new workers and continuing training for executives and local leaders[18].

The main tasks of these training schemes are as follows:

- to provide students with a certain degree of theoretical knowledge and practical skills and aptitudes in the respective trade, craft or field of specialization;

- to consolidate and expand the level of qualification of executives and local leaders in accordance with the constantly changing demands on workers as a result of new technologies, techniques and work organization.

Centres of this type are organized, as appropriate, in conjunction with the respective production units following the establishment of curricula and syllabuses and the provsion of lecturers and the necessary teachware and training equipment.

The minimum age-limit for the courses training new workers is 16; the upper age-limit may vary according to the trade in question - in some cases it may be up to 40.

Theoretical training is organized and implemented in the classroom. Modern technical teaching aids and intensive training methods are widely applied. Practical training is carried out on-the-job.

Training is full-time, and may or may not involve interruption of the production process. Special guidelines stipulate the students' weekly workload, the length of the lessons, the workload and duties of the lecturers, the nature content of the different vocational examinations. the content of the system for the evaluation of students' standards, etc.

The so-called individual and brigade method of training is applied within the framework of this type of vocational training. Vocational training acquired by this method is organized when the needs of qualified workers cannot be met by a full-time course of training (e.g. due to a limited number of candidates). This usually applies to training in occupations involving low complexity of labour. Training of new workers on-the-job in occupations requiring a certificate is not permitted.

Training in this context is implemented by study of the theory of the trade in question, involving up to 30 lessons and practical training over 2-6 months.

In 1988, 1 221 753 persons attended the courses and schools offering vocational preparation and continuing training; 981 766 (80 %) of them were workers. The structure of the students according to the branches of the economy shows that 47 % of the trained workers were from different branches of industry, 8 % from construction, 16 % from agriculture, 1 % from forestry, 16 % from transport and 1 % from other branches of material production. As far as differentiation according to the character of the acquired qualification is concerned, the numbers of those having completed continuing training courses clearly accounted for the lion's share: 903 135 persons or 92 % (see Table 15).

4. Higher and College Education

A. Establishments of higher education

Higher education is a priori vocationally-oriented. It is therefore only natural for it should be given the necessary attention, especially since the country's establishments of higher education prepare the most highly qualified specialists for all spheres of social life, specialists in whose hands the management of the new production and social technologies is concentrated. Two forms of education can again be found at this level - full-time and extramural.

The full-time form of training at different establishments of higher education is open to persons who have completed secondary education, who are not older than 35 and have the required work experience if they have not entered higher education immediately after secondary level. The age-limits are lower for some higher educational establishments, e.g. 27 for sports, 23 for women and 25 for men for some fields of theatrical studies, 23-28 for certain studies at the Conservatory and 24 for some schools of economics. Persons who have already graduated from one higher educational establishments are not admitted to the full-time form of education[19].

A certain length of work experience is required for those who did not enter a higher educational establishment immediately after finishing secondary school. For those applying the year following the completion of secondary school this requirement is 8 months; for young people applying more than one year after secondary school it is 8 months for the first year after leaving school (the deadline being 15 July of the following year) and uninterrupted work experience during the subsequent years before the entrance examinations. Training at vocational education centres, vocational training courses and schools, full-time lecturing, attendance of higher schools and colleges and other educational establishments are also recognized towards the required length of work experience. There are also some more detailed requirements for candidates who have completed their schooling abroad and have not studied certain subjects.

Candidates may apply for all specialized fields at a higher educational establishment, with the exception of the higher arts schools where candidates may apply for one more higher educational establishment.

Admission to establishments of higher education is based on entrance examinations in subjects which differ according to the specialized field of training at the respective establishment.

Student assessment for entry to higher educational establishments is based on a rating system comprised of twice the mark from the first entrance examination for the respective specialized subject, the mark from the second examination (for subjects where a second entrance examination is required), plus the overall mark from the school leaving certificate and the marks in two subjects from the school leaving certificate (depending on the specific leaning of the higher educational establishment in question).

The grading systems differ somewhat for journalism, visual art, pedagogics, architecture and landscape gardening, classical phylology, international relations, international economics, political science and international tourism, although the basic principle of the final grades remains. There are also certain differences in the entrance examination and grading procedures in the higher educational establishments for the arts and sports.

Candidates are classified according to the positions approved by the Ministry of Culture, Science and Education into three categories: men who have completed national service, young men who have not yet completed military service and women. The ratio between the number of men and women is in principle 1:1. For some occupations and subjects for which a larger number of men or women are needed, the ratio may be amended by a resolution of the Ministry of Culture, Science and Education. Young men who have not yet completed military service and have entered an establishment of higher education start attending the lectures following their military service.

Extramural and evening classes at the higher educational establishments are open to persons who have completed secondary school, who have at least one year work experience, who are not older than 40 and are recommended by the institutions where they work; men must have completed their military service. Persons with higher education can also apply provided they have at least three years of work experience in the specific field in which they trained. No specific length of work experience is stipulated for mothers with children under 6 years of age.

Classification of the candidates takes place according to the rules for full-time education and admission criteria follow a plan approved by the Ministry of Culture, Science and Education. Those who have gone on to technical schools following secondary school can continue their education at

the extramural or evening classes offered by the establishments of higher education in the respective field of specialization without having to sit an entrance examination or being included in the plan. The conditions in such cases are determined by the Minister of Culture, Science and Education.

There are currently a total of 30 establishments of higher education and 2 branches of these establishments in Bulgaria with a total of 157 buildings, 1 025 classrooms, 3 102 cabinets, 2 845 laboratories, 308 workshops, 84 sports halls and 53 conference halls. The education process is carried out by 15 941 educationalists, of whom 1 132 are professors, 2 753 associate professors, 7 266 assistant professors and 4 790 lecturers. 109 517 students, 62 474 (57 %) of whom are women, are currently studying at Bulgarian institutes of higher education. Full-time education caters for 7 298 students (42 965 or 54 % women), extramural courses have a total of 29 287 students (18 797 or 64 % women) and evening classes are attended by 1 199 students (735 or 61 % women) (see Tables 16, 17, 18 and 19).

Students are trained in ten professional fields (mineral research and exploitation, the chemical and metal working industries, mechanical and appliance engineering, electrical energy, electronic and electrical engineering and appliance engineering, automation and communications, food technology and the wine and tobacco industries, architecture, construction and geology, agriculture and

forestry, economics, university and pedagogical specialities, 34 educational directions and 158 fields of specialization.

B. Colleges

Colleges are post-secondary educational establishments providing education in a given specialized field at a lower level than that of the professions acquired after graduation from the higher educational establishments[20].

Full-time college courses are open to young people having completed their secondary education who are not older than 35, with the exception of some fields for which the upper age-limit is lower (e.g. colleges of international tourism where the age-limit is for 25 the subject "Organization of tourist services" and 30 for the subject "Hotel and restaurant management").

Candidates for all colleges must have a minimal rating of 8.0, comprising the sum total of their average mark in the secondary school leaving certificate, plus the mark in the school leaving certificate in the specialized subject chosen for inclusion in the rating. If the candidates have not studied the respective subject (e.g. in some secondary vocational schools and technical schools, biology or Bulgarian geography are not taught so that those leaving these schools do not have the respective mark in their school leaving certificates), they may take these examinations at certain secondary schools.

Candidates who have not entered a college immediately after finishing secondary school must have a certain amount of work experience.

Students are admitted after written and oral entrance examinations which differ according to the various subjects on the basis of a rating system formed by the sum total of the average mark from the school-leaving certificate and the marks from a number of the subjects from that certificate (depending on the form of education and the specialized subject).

Extramural training is also offered by a number of colleges; in principle it lasts one year longer (four years on average). There are no age-limits. Candidates must be at work, they must have a certain length of work experience differing between the various colleges and they must also have the approval of the enterprises, offices or the institutions at which they work. Mothers of children aged below 6 are exempt from the work experience and enterprise recommendation requirements. The conditions for taking examinations, calculating ratings, etc. are identical to those applicable to students from full-time forms of college training (see Tables 20 and 21).

5. Continuing_training

In 1980, a uniform national continuing training system was established in Bulgaria providing for full-time extramural and combined forms of training for refresher training, specialized training and retraining of business executives, state officials and clerical staff, functional managerial cadres and specialists with higher education qualifications and executives. The system is aimed at providing a more flexible response to the high qualification requirements in the wake of the introduction of new technologies to industry and the administration. A council for the coordination of the qualification of cadres was established within the Council of Ministers consisting of the Deputy Prime Minister (President), the Minister of Education, the President of the Labour Committee and the Director of the Institute of Social Management (Vice Presidents) and leading representatives at deputy ministerial level from all ministries and heads of departments in all the governing bodies of the public organizations as members.

Continuing training councils and centres at ministerial level, executive committees of the Regional People's Councils and other institutions were established.

Continuing training departments were set up within the establishments of higher education, the more advanced technical schools and other secondary schools.

The following forms of continuing training are provided:

- refresher and extension courses (45 days);
- job profile specialization and extension courses (one year full-time training);
- retraining for a new occupation or specialized field (up to two years).

All the activities relating to the continuing training of cadres are organized and implemented on a self-supporting basis; in some cases they are financed by the state budget.

The following continuing training establishments may be opened within the framework of the national system:

- educational centres, schools and other forms of continuing training for cadres at the ministries, other institutions and the Regional People's Councils;
- continuing training departments for cadres at the research institutes of the Bulgarian Academy of Sciences and at the higher and secondary continuing training establishments for cadres active in the fields of science, teaching and development, lecturers in the unified continuing training system and specialists with higher and secondary education;
- educational units (centres, schools) and other forms of training at the leading research and engineering organizations for the continuing training of specialists with higher and secondary qualifications and functional managerial cadres;

- courses at the technical/scientific unions which are refresher and extension courses for specialists with higher and secondary education;
- vocational educational centres, schools and other forms of industry-based training schemes and the People's Councils for the continuing training of executives and leading local cadres.

The continuing training units operate according to approved curricula. The work-load of the full-time students is up to 36 lessons per week and that of extramural students up to 16 lessons per week.

There are no age-limits for applicants for the different forms of training. Candidates are nominated by their enterprises, institutions and organizations; they may be persons who have only completed one of the stages of the educational system, but have already been appointed to a working position.

Participants in the various forms of continuing training must work for the institution which nominated them as follows:

- three years if training lasted more than one year;
- two years if training lasted between six months and one year;
- one year if training lasted from one to six months.

## III. SOME SPECIFIC FEATURES OF THE PROCESS OF EDUCATION AND VOCATIONAL TRAINING RELATED TO THE INTRODUCTION OF NEW TECHNOLOGIES IN BULGARIA

The by Bulgarian standards relatively vigorous introduction of the new achievements of technical and scientific progress to all spheres of production, various walks of everyday life and the education process itself has raised the question of a qualitative change in the basic character and organization of the educational process in the country. It is only natural that in recent years the demands on the educational and vocational training of young people have increased considerably. The wide application of microelectronics, intensified automatization and cybernetization of the production processes, not to mention the changes in the very utilization of tools as a result of the introduction of new technologies, require not only a new type of vocational training, but also new personal skills reflecting the need for a higher degree of organization. technological discipline and a creative approach to the work process. It is therefore no longer merely a problem of the education system providing young people with education or vocational skills and labour discipline. The problem is that of the quality of the education and the vocational skills imparted by the different types of educational establishments and vocational institutions. From this point of view, the education system in Bulgaria has undergone a considerable transformation in the field of both general and vocational

training. The changes in the system's organizational structure have already been outlined in the previous chapters. Of no less importance are the changes that have affected the essence of the educational process. These changes are mainly oriented towards focusing on those elements most closely connected to the training of young people for work under the conditions of new production technologies - more intensive study of the principles of natural sciences, greater emphasis on the concrete technologies used in the production process, more extensive knowledge of the organization of production under the new economic and material technical conditions and the new technologies applied in this field. The changes are radical. Despite some progress, a number of difficulties and problems have also arisen for both objective (the state of the necessary equipment in the economy in general and the education and vocational training system in particular, lecturers' training standards, the extent of the practical introduction of achievements into the field of new technologies, etc.) and subjective reasons (the need to overcome the psychological barriers in the minds of young people and their parents towards the new orientation of vocational training, specific local interests in the organization of the new education system, the disinterest of some people working in the system of education in change, etc.). Nevertheless, the process of forging closer links between the general education and vocational training system and the new production and social technologies has already got off the ground and would appear to be unfaltering.

A. Some_objective_prerequisites_for_the_adoption_of_new technologies_in_Bulgaria

The introduction of the achievements of scientific and technological progress in Bulgaria is illustrated by the rise in the number of scientific publications related to scientific and technological progress, on the one hand, and by the increased number of scientific and technical achievements introduced into the production process, on the other. For instance, 16 533 applied science research studies and 1 101 basic research studies related to the scientific and technological revolution were conducted in Bulgaria in 1987. Research in the field of applied science was directed towards the following fields: the creation of new and improved products (4 828), new and improved raw materials and materials (116), new and improved technologies (4 793), production and management automation (1 316), scientific production organization, labour and management (458), etc.[33].Applied research projects in science and technology increased from 6 036 in 1975 to 12 275 in 1987, distributed as follows: new and improved articles (3 228), new and improved technologies (5 204), automatic production and management systems (712), the solution of problems in the scientific organization of production, labour and management (540), etc.[34].

The number of economically viable proposals for inventions almost doubled in the period 1975 - 1985. Capital investment for the modernization, reconstruction and

expansion of production is constantly being increased. Its proportion is largest in industry - 65 %[35]. There was a total of 1 592 generally mechanized and automated industrial sections, workshops and productions throughout in the country in 1987[36]. The number of computers used increased approx. 2.5-fold in the period 1984-1987 and that of microcomputers about sixfold. The development of the electrical and electronic industry is particularly rapid, the latter increasing its production by 180 % compared to 1980, and chemical production increasing by 154 %[37]. Special significance is attributed to the abrupt increase in industrial goods directly related to scientific and technical development. For instance, the production volume of computer hardware increased by 490 % between 1975 and 1987, and that of machinery for the automation of production processes 198 %, etc.[38].

Despite this progress, it should nevertheless not be forgotten that the introduction of the achievements of scientific and technological progress in Bulgaria is on the whole considerably slower than that of the developed industrial countries. There are many reasons to explain this phenomenon. In contrast to the period 1965 - 1975, the early 1980's marked a period of economic stagnation in the country, and the time-lag in the implementation of highly productive and progressive technologies and equipment undoubtedly had a role to play in this context.

It is only natural that the education and vocational training system is not in a position to find a radical solution to these more general social problems. They can nevertheless contribute to the creation of better conditions for the smooth introduction of new production technologies to the country's economy.

B. Orientation of the educational and vocational training system towards the training of young people for work in the context of new technologies

In the process of the training of young people for work and life in the context of the new production technologies, special emphasis is laid on instruction in the principal natural sciences, mathematics, physics, chemistry and biology. This emphasis is laid both in the secondary polytechnical schools and the secondary vocational/technical and vocational schools. The new syllabuses for training in these subjects are based on the understanding that the knowledge young people acquire must be up-to-date and the education system must provide students with an opportunity to constructively apply acquired knowledge in practice.

This fact has necessitated several syllabus revisions in recent years[42].

Teaching in mathematics now has a greater bias towards students actually understanding the practical and applied results. The new fields of mathematics included in the syllabus - mathematical analysis, vectors, mathematical modelling, the coordination method, geometric transformation, etc. - offer a platform for the development of a solid scientific basis for vocational training on a higher level and better possibilities for self-fulfilment in the fields of work where this knowledge is needed. The introduction to the syllabus of the theory of probability, mathematical statistics, etc. is also under consideration.

The importance of physics in the syllabus is also being constantly extended on the basis of the conviction that physics as a school subject contributes to the greatest extent to the achievement of the objectives of polytechnical education. Under the current syllabus, students are acquainted with the basic theories of physics, with quantum mechanics, classical mechanics, electrodynamics, molecular and kinetic theory. In order to link up training in this subject with the requirements of vocational training for work in the context of new production technologies, the improvement of education includes relating knowledge of mechanics to production mechanization and automatization, knowledge of molecular physics and thermodynamics to the production of new materials and the thermal energy sector, knowledge of electrodynamics to electrification, electronization and robotization and knowledge of quantum physics to applied optics, lazer technology, nuclear energy, etc.

The link between theoretical knowledge of the fundamental science and practical skills in concrete vocational training is also applied in the teaching of chemistry. The syllabuses of the different types of secondary school include study of the structure of matter, the different types of chemical reactions, chemical kinetics, catalysis, etc.; special emphasis is also laid on the elucidation of the scientific bases of production in the chemical, oil-processing, metallurgical, etc. industries.

The syllabus for teaching in biology is linked to vocational training in agriculture, the food, tobacco and wine industries, medicine, etc. It includes study of the practical application of themes related to industrial biology, bacterial infections, mineral fertilizers, fermentation, biological processes modelling, etc. Special emphasis is also laid on the fundamentals of biotechnology, the conditions for increasing the productivity of labour in agricultural and microbiological production, the basics of nature conservation (ecology), etc.

The quality and level of acquired knowledge and its link-up with the vocational training of young people in the Bulgarian education system may be differentiated according to the three forms of training mentioned above: obligatory, eligible and optional training.

Training in occupations related to new production technologies is widely practiced at vocational technical schools (e.g. "robototechnics", "mathematical programming", "mechanics of optic electronic devices", etc.). In electrotechnical schools the following subjects are studied in accordance with the young person's future profession: industrial robot operation, guide and sensor systems, industrial robot programming, robotized modules for metalworking. Flexible automated production systems are installed in the schools themselves. The specialization "economist/administrator in settlement systems" has been introduced in the schools of economics; this involves the new organizational and administrative technologies and the modern technical/scientific means of their implementation. Subjects related to modern biotechnology, genetic engineering, food technology, low-waste viticultural and tobacco technologies, the growth of textile cultures under artificial conditions, etc. are studied at agricultural schools.

One of the real trends towards improved training both in schools of general education and vocational schools is the computerization of the training process itself. The efforts to train young people to work with computers, on the one hand, and the use of computers in the training process, on the other, have intensified following the elaboration and adoption of a BCP Politburo resolution in October 1984. The main purpose of this process is to radically transform young people's technical culture and

to lay the foundations for their adaptation to the new equipment and technologies used in production. In computer training young people master the basic principles of programming, acquire skills and aptitudes in this new field of work and become familiar with the wide potential of the new equipment in terms of both production and organizational technologies. Training comprises the following fields:

- the creation of a certain algorithmic culture in students, including study of one of the algorithmic languages and programming skills;
- mastery of the basic principles of computer mechanics;
- study of the spheres of application of micro- and macrocomputers in the various fields of production, organization and everyday life.

The wide introduction of computer training in the Bulgarian education and vocational training system is based on the objective characteristics of the new production technologies - automatization on the basis of broad application of electronics and microprocessors. The rate of introduction of computers into the training process is relatively high. According to the "Programme for the creation of complex conditions for training and working of young people with computers up to 1990", adopted by the Ministry of Culture, Science and Education, virtually all secondary school teachers are to be trained to work with elementary computer hardware and software.

Obligatory training of all students in pedagogical specialities involving work with microcomputers has been introduced[43].

The specialization of Bulgaria in the production of personal computers within the framework of the Council for Mutual Economic Assistance required the creation of the necessary material conditions to meet the needs of such equipment. And these needs proved to be relatively high in the sphere of education . One of the reasons was the great interest of young people in working with such equipment. With a view to meeting these needs, computer clubs have and are still being set up in regional centres, plants, educational establishments and youth clubs all over the country to train young people to work with EDP and teach them the basic principles of informatics programming and software.

Mass computerization of general and vocational education has one specific side-effect - it permits an initial differentiation of young people according to those with a higher abstract and theoretical abilities and those with a clear leaning towards applied, practical activities. This facilitates the vocational orientation of gifted young people towards the various higher educational establishments and their different profiles and specialized fields.

Meeting the needs for a systematization of knowledge in this field, a new subject, "Basic principles of informatics", was introduced in the secondary schools in 1987. This subject includes the elements of informatics which are at the basis of polytechnical knowledge and skills (e.g. the notion of the algorithm, basic principles of programming, the development of operational thinking, the capacity to draw up a work plan in elementary, algorithmic language, the computer-assisted solution of educational and production problems within the framework of vocational training, study of the fields of application of computers, etc.).

## IV. SOME IMPORTANT PROBLEM AREAS IN EDUCATION AND VOCATIONAL TRAINING IN BULGARIA

Several problem areas can be identified arising from the structrue and organization of the vocational training system and the contents of the educational process:

(i) organization

- there are still a number of loopholes in the system of control and registration of young people subject to compulsory education. In 1984, e.g., the number of young people not attending elementary school was 3 527 and that of those who left school before completing the 8th class 7 092[24], constituting 0.6 % of all students at elementary schools; this gives rise to a relatively large proportion of young people staring work without a secondary education qualification;

- failure to find the optimum means of striking a balance between the manpower requirements of industry, the administration, institutions, etc. in terms of cadres and the training of cadres in the different professions and specialized fields. This is to a large extent due to the fact that the "consumers" do not correctly forecast the educational and qualificational structure of the cadres they will need. The vocational training system in its turn distributes the students in proportion with the consumers' demands without a clear vision as to the real needs and

character of the future requirements of cadres. Thus in certain sectors more cadres than necessary are often trained who must later acquire new qualifications, while other sectors are characterized by deficits. These imbalances lead to the conclusion that the quantitative aspect of planning and training of cadres is given priority over qualitative aspects;

- the existing network of educational establishments and vocational training routes is too complicated, posing a further obstacle to its optimization[25]. Different combinations of divisions of occupational classes are emerging at the various establishments of vocational training (e.g. there are vocational/technical school classes at the vocational secondary schools, at the educational/vocational centres and at colleges).

There are of course objective reasons to be found for these features of the education system, related to conditions in the different populated areas, the geographical distribution of the productive and non-productive forces, material equipment needs, infrastructure, etc. At the same time, however, subjective reasons and local interests continue to affect decisions on the character of vocational training offered by the different vocational schools which impedes the application of modern technologies in the planning and development of an optimal network of educational establishments;

- the material equipment of the educational system to a certain extent still lags behind the requirements of modern life. An investment policy adequate to meet these requirements is necessary, not only to achieve its renovation, but also to reach a level of 4-5 years behind the enterprises (i.e. in terms of material equipment) which is considered optimal in Bulgaria[26]. Projects on the network of educational establishments must include as priority areas educational establishments involved in the training of cadres required from the strategical point of view for technological progress and the economic development of the country - key areas in this field are electronics, biotechnology, new materials, etc.;

- an optimal balance has not yet been struck between general education and vocational training. According to the cadres implementing the educational process[27], in some secondary and in the secondary vocational/technical schools there is too much emphasis laid on general education, to the detriment of vocational training. On the other hand, at the Unified Polytechnical Schools, the vocational training of Grades 2 and 3 students has not yet reached the standard required for the training of cadres with high-level vocational qualifications capable of practising the profession in which they have been trained;

- the problem of the nomenclature of occupations is of no less importance. There is still no uniform criterion for training in occupations with a more general profile. This

means that some vocational training courses are too wide in scope in terms of actual activities, tools and technologies (e.g.metallurgy, chemical industry, mining), whereas others are considerably over-specialized (e.g. trade, food, catering, services, tourism and recreation). This leads to a divergent quality of skills among those later working in a given occupation;

- the problem often arises of the discrepancy between the occupations offered to the students in accordance with the needs of the national economy, on the one hand, and the aspirations of young people, on the other. Very often vocational education centres are organized merely in the light of the material equipment of the respective polytechnical school, with no consideration of the needs of the local economy. At the same time, a discrepancy can also be observed in the occupational aspirations of young people and the occupations they are actually offered[28];

- the lack of teachers with a level of technical education capable of high-quality professional training is another problem. The fact that these cadres are paid more when engaged in industrial production is also of considerable importance;

- in the continuing training system, the main problem that concerns both researchers and organizations responsible for its implementation is its inadequate scientific and pedagogical level. Disregard of this aspect at the level

of organization means that the system is incapable of solving the problems it faces and reacts belatedly to the changes ensuing from the introduction of new production technologies.

The need to determine the effectiveness of the new education system and the search for new ways and means of improving this system are reflected in the research studies conducted in this field. A number of other problem areas can be pinpointed on the basis of the conclusions drawn by some of these studies.

(ii) Vocational orientation and occupational choice

The vocational skills imparted to young people in the process of their education undoubtedly offer better opportunities for a more effective and smooth transition to the world of work. The fact that young people have the opportunity of becoming acquainted with different occupations and with the implementation of new technologies in the sphere of production at school gives them a better understanding of the real world of work and helps them to better assess their own occupational aspirations and ambitions against the background of the concrete demands of the various occupations.

- there is nevertheless still a certain disparity between the occupational aspirations of the young people and the occupations in which they actually receive training. The

reasons for this can be found both in the aforementioned discrepancies in the system of cadre planning and the admission procedure of the various vocational training routes. The candidates are admitted for training in different occupations on the basis of their marks and it is only natural that students with excellent and very good marks have better chances of being admitted for training in the more attractive occupations. At the same time, a large number of young people have already opted for occupations requiring higher education and upon completion of secondary school, almost all of them go on to establishments of higher education. The result: on the one hand, positions in certain occupations remain vacant despite the fact that cadres have been trained for these posts, and on the other hand, due to their lower marks, a large number of young people who would otherwise have learned these trades and occupations and practised them are forced to start training in occupations of little appeal to them and are left with the feeling that they have made a bad choice;

- subjective errors are still made in the orientation of young people towards a given occupation. These errors generally stem from the existing value system, the structure of occupational aspirations and motives for exercising a given occupation. The results demonstrate that in cases in which occupational choice has been made on the basis of consumer and wordly values, young people are very often disappointed and dissatisfied with the choice they have made[29];

- the quality of occupational choice is influenced by the insufficiency or total lack of information on the specific requirements of an occupation and its concrete working environment. Despite the wide information and consulting activities of schools and vocational guidance centres of the local People's Councils, when making their occupational choice, many students are, on the one hand, not very well acquainted with the real world of work and, on the other hand, do not initially adequately estimate some of the occupational elements which turn out to be factors of great importance at a later stage of training or once they start work;

- the results from studies on the effectiveness of the Inter-school centres for vocational/polytechnical education highlighted a number of problems in the realization of their vocational guidance functions. They are not yet considered a leading factor in occupational choice by young people who regard the preliminary information on occupational trends provided by the Centres as inadequate and prefer to obtain information from informal sources (friends, classmates, etc.). Both students and their parents have prepared the following means of improving the work of the Centres: an improvement in the qualification standards of the teachers, raising the demands of society on them, extension of training in grades II and III of the Secondary Polytechnical Schools, an improvement in activities explaining the nature of

vocational training to the students and their parents, extension of the number of vocational streams, improvement of material training facilities, etc.[30].

(iii) Vocational training

A number of obstacles to the provision of high-level vocational training resulting from difficulties with material equipment, the inability to ensure high-level qualification of the teachers, etc. have already been mentioned. Results of research studies[31] have shown the following:

- in the course of their practical training in educational/vocational centres, some 40 % of young people do not acquire the necessary knowledge to be able to perform their work tasks independently and without any problem. At the end of vocational training, about 50 % of students still require further knowledge in order to enter the labour process. This is most often a result of the shortcomings of practical training in the respective occupations as an offshoot to deficiencies in the organization of the educational process;

- a lack of self-confidence with regard to vocational training is most often one of the reasons for the unwillingness of a great number of young people to start work in the occupation in which they have been trained; it also explains the high fluctuation rate during the first

year of working life and the fact that it is undoubtedly necessary to include a large number of young workers with one year of vocational experience in continuing training schemes;

- the present system and methodology for the assessment of the vocational training standards of young people leaving secondary schools requires further improvement. It is suggested that this system be based on three components: level of qualification, reliability at work, work achievements in the first and the following 3-5 years[32];

- a topical issue is the amalgamation of general vocational training at Secondary Polytechnical Schools (2nd cycle), secondary vocational/technical schools and vocational schools (in which students are admitted upon completion of the 8th class);

- the contents of the general, vocational and specialized training at the polytechnical and the vocational schools has not yet been harmonized;

- material equipment problems are as follows: the construction of new buildings, securing of new equipment and facilities, telecommunication links between computers, laboratories and central units, individual provision of teaching aids, television programmes, etc. supply of laboratories with new equipment, etc.;

(iv) Utilization of new technologies

The basic problem in the sphere of training for work in the context of new technologies is the discrepancy between the acquired level of training and concrete working conditions. These two extremes often clash when highly-qualified specialists are trained to work with modern equipment and new technologies but start working at workplaces with old equipment and technologies (or cannot start working as specialists as a result of a shortage of jobs) or vice versa - young people have been trained to work with old machines and technologies but the workplace is equipped with new technologies.

It has already been mentioned that the achievements of technical and scientific progress are introduced to Bulgaria with a greater time-lag than in a number of other countries. This is a problem which undoubtedly also concerns the vocational training sphere. I shall try to highlight some of the reasons for this phenomenon by illustrating various trends in the development of material and technical equipment in the main sector of the Bulgarian economy, namely industry.

Some indication of the present state of industry's technical equipment can be found in the fact that only 15 % of power-driven and motorized machinery in industrial production are fully automated, about 36 % are partially automated, approx. 46 % are mechanized and some 2 % are

manually operated. Essentially, the above-mentioned basic production equipment comprises about one half of all basic production equipment within the sector, their amortization period is shorter than that of the total volume of basic production equipment and in practice they provide the basis for the materialization of technical and technological progress. A significant fact in this context is that above 20 % of this equipment is on average more than 20 years old: manual equipment 22.4, mechanized 22.8, partially automated 21.4 and automated 10 years. Average operational age is approx. 11 years.

This phenomenon stems from a number of economic and social processes, the most important of which, in my opinion, are:

- a high rate of capital investment with a low rate of write-off. The estimated value of the average service life of basic production funds on the basis of data from the volume of liquidated production equipment and new equipment introduced is 25-28 years. In practice, the amortization rate of material production as a whole is permanently declining by 1.5 % (this process is more clearly manifested in industry). Calculations show that in the last 15 years average service life has increased by approximately five years, while the average operational age is about two years;

- the imbalance in the use of amortization funds which at present tend to be used more for accumulation than replacement. One third of amortization funds were used for replacement purposes in the period 1966 - 1975 . In the early 1980's only a quarter of the funds were used for this purpose and this relative proportion is still declining. The proportion earmarked for replacement is 2-3 times higher in the developed countries.

This also holds true for the rate of write-off which according to economists should be twice as high as it currently stands, i.e. about 3 %;

- governmental investment policy tends to grant priority to certain sectors of the economy. This is a process with many hidden risks in the context of the centralized management of the economy. A gap is emerging between sectors and sub-sectors with strongly underdeveloped production funds in terms of science and technology (as well as with very high relative proportion of workers) and between sectors and sub-sectors with highly sophisticated equipment;

- the predominance of large-scale enterprises in the production process. Such enterprises are as a rule less flexible whenever a change in their production programmes occurs as a result of a change in the economic conditions.

The extreme hierarchization of their management very often results in inertia, unwillingness to assume responsibilities, the wish to develop without taking any risks - but at the same time without introducing new technologies.

In effect the relative proportion of automated production equipment is comparatively small. A larger proportion can be found in production areas where the production process itself requires automation, e.g. in segments such as the oil and gas industries, the relative proportion of automated equipment stands at 70 %. As a result of extensive economic development, an imbalance can be observed in the technical level of the main production fields, triggering phenomena such as low production quality, problems in production organization, difficulties in coping with new technologies (mainly at the beginning of their implementation) and distortion of cooperation and integration at the level of different enterprises, segments and sectors as a consequence of imbalances in the technical standards of their equipment.

The objective economic processes in Bulgaria outlined above provide an extremely general framework in which young people can become acquainted with new industrial technologies, participate in the process of production and develop their attitudes towards the scientific and technological process. It is equally important to acknowledge the existing work opportunities for the

participation of the young person in the process of public production which have a major influence on their orientation towards the different types of vocational training.

Young people active in the production process generally have a higher level of education than older people. 62 % of young workers aged up to 29 have completed secondary and higher education. Only 36 % of older people have this educational background[39].

The difference in the educational standards of the generations can be explained by both objective (the introduction of compulsory primary school education, the stipulation of certain educational requirements for the most attractive jobs, etc.) and subjective factors (education, in particular higher education, as a supreme social value).

The rise in the educational standards of the new generations is nevertheless accompanied by a widening gap between the rate of change in educational standards, considerably lower than subjective expectations, and the rate of implementation of the achievements of the scientific and technical progress into the labour process.This contradiction is demonstrated by the results of a number of sociological research studies[40].

Thus, for example, a discrepancy can be observed between the accelerated growth of educational standards and the degree of modernization of basic production equipment. This discrepancy may sometimes lead to a drop in productivity, job dissatisfaction and additional losses of intellectual potential. It is no coincidence that only some 38 % of workers have completed continuing training courses, a fact which in practice means that the majority of those employed in the economy work with knowledge dating back 10-20 or more years ago.

The nature of working activity is also a significant factor, whereby it is again possible to observe a difference between the younger and older generations. A large proportion of young people at work accounts for those in manual and non-mechanized labour (33 %). The relative proportion of those working in non-mechanized sectors rises with increasing age, a fact which augurs the emergence of new problems in the qualitative balance of labour resources in the years to come, when approximately 35 % of the entire workforce shall reach retirement age. In essence, these are the people who are presently largely engaged in manual, non-mechanized labour. For instance, 40 % of the 50-60 age-group are engaged in this kind of labour, while 66 % of those active in manual, non-mechanized labour are between 50 and 60 years old. This age-group will most probably be replaced by those about to enter working life

in the next 7-8 years. With the present speed of the introduction of new technologies, there is a real possibility of an increase in the relative proportion of young people engaged in manual, non-mechanized labour.

Similarly, a number of studies have proven that the work culture of young people is increasingly becoming shaped by the influences of the need to work with modern techniques and technologies[41]. Some workers in the production process are faced with discrepancies between their preliminary ideas concerning the workplace and actual requirements on-the-job on account of the introduction of new technologies for which they are unprepared. For example, 12 % of young people engaged in mechanized production and 14 % of those engaged in automated labour processes did not expect to be faced with highly advanced techniques and sophisticated technologies;

- another problem in the concrete sphere of training for work in the context of new technologies is the insufficient time allocated for training in occupations related to new technologies. It has been pointed out, e.g. that the two years of training envisaged for the speciality of robot construction are not sufficient to permit a complete mastery of this complex field[44];

- in some cases, on account of subjective factors within the educational system (the teacher), vocational training remains abstract and unrelated to practice. Students are

thus unable to grasp the links between the fundamental scientific knowledge they are imparted in the theoretical part of the training and concrete practice, i.e. to understand the scientific basis of the new production technology in the field for which they are trained;

- certain problems arise in courses preparing for work with computers and in concrete computer-based activities. Computers are still sometimes introduced into the educational process without a specific plan. The preliminary preparation of the effetive and smooth implementation of the process of computerization has not yet been accomplished (preliminary preparation here referring to the preliminary scientific, methodological and personnel preparation, providing the conditions for a successful start-up and further development of the educational process as well the practical mastery of the new equipment);

- a further problem is related to the subjective attitude of some young people, mainly those at Secondary Polytechnical Schools, towards the new occupations which are the result of the technical and scientific revolution, i.e. occupations involving the application of new production technologies. This phenomenon can be explained by the fact that mastering these professions requires a high degree of effort, work and stress, i.e. moral and intellectual qualities not inherent to certain young people.

The subjects discussed so far are undoubtedly very complex, involving highly complicated problems which in many cases extend beyond the scope of the education system and the vocational training of young people. A serious debate is currently taking place in Bulgaria on how to find the optimal means of organizing the education process and to overcome its inadequacies. The overall aim is to promote the chances of development of both the younger generation and society as a whole in the context of new production and social technologies. The changes which are taking place are being implemented with great momentum so that some of the problems and processes discussed in this report may no longer be topical at the date of its publication. It is moreover conceivable that organizational or regulatory premises may have been changed. I nevertheless believe that the above picture may give the reader a relatively accurate description of the present status, problems and development trends of the Bulgarian education and vocational training system.

INSTITUTIONS CONCERNED WITH THE MANAGEMENT AND RESEARCH OF VOCATIONAL TRAINING IN BULGARIA

## I THE MINISTRY OF CULTURE, SCIENCE AND EDUCATION

The Ministry of Culture, Science and Education is the basic institution responsible for the management and observation of the development of vocational education and training of young people in the country. It has the task of implementing state policy in the field of education. The Ministry is structured as follows:

- at national level, there are the collective bodies of self-managing organizations in the sphere of the intellectual life: the Committees for Science and Higher Education, the Education Committee, the Committee for Culture and various other collective bodies for the self-management of specific activities. The first two Committees are directly responsible for the assessment and improvement of vocational training standards;

- at regional level, there is the Commission for Intellectual Development linked to the People's Councils, self-managing public bodies at regional and local levels;

The Ministry of Culture, Science and Education participates in the elaboration of the United Plan for the Scientific, Technological and Socio-economic Development of the country and the state budget of the spheres falling

within its purview. The Ministry also prepares and submits to the Council of Ministers regulatory documents concerning the problems falling within its competence, including the sphere of vocational education and training.

The Ministry moreover contributes to the elaboration of long-term programmes and regulations concerning integrated scientific and technological programmes for the construction, renovation and utilization of the material and technological sources of education, science and culture. One of the basic tasks of the Ministry is to exercise control over the application of the state policy, with the aim of improving the vocational training and cultural standards of young people.

In more concrete terms, the Ministry prepares the regulatory framework for the creation of social, pedagogical, material, technical and other conditions for the training and work of Bulgarian youth in the context of new technologies, draws up projects and concrete programmes in the field of vocational training and the improvement of the vocational skills and coordinates the activities aimed at the realization of such projects and programmes.

Within the Ministry proper, operations in the field of vocational training and vocational education are conducted by the Directorate General for Vocational Training.

## II. THE INSTITUTE OF YOUTH STUDIES

The Institute of Youth Studies in Sofia is concerned with the problems of the vocational training and education of young people against the background of the interest of scientific research in these topics. The studies are aimed at pinpointing mechanisms by means of which the different levels and types of vocational training and education influence participation in the labour process, the socio-occupational careers of individuals and the exact quantitative and qualitative dimensions of the social processes taking place in this problem area. Particular attention is devoted to the following fields:

- the different roles of the various types of vocational training and education (and the different educational and training institutions) with respect to the objective material and social status of the young worker, their value systems, working potential, social activeness, innovation, etc.

- the influence of new technologies on the processes of vocational training and adaptation to work in the new working environment;

- the position and role of vocational education and training in the framework of the profound economic and social changes currently taking place in Bulgaria and concerning most of all the social and legislatory conditions governing economic activity;

- the problems of young people with different levels and types of vocational education and training in the different stages of the socio-occupational development of their personalities, etc.

The research programme in this field is being conducted and coordinated by the Research Section "Problems of the Youth's work" and with the assistance of the Research Section "Socialization of the High and Higher School Students".

## III. THE "T. SAMODUMOV" INSTITUTE OF EDUCATION

The Institute studies questions relating to vocational and higher education . It has the following departments: "Contents and Methods of Vocational Education", "Contents of Adult Education" and "Work, Polytechnical and Vocational Orientation". The aim of the departments is to devote closer attention to vocational education issues. The Institute has recently been reorganized and restructered and is now in the process of drawing up its research programmes.

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Table 1

LEARNERS IN THE PEOPLE'S REPUBLIC OF BULGARIA

| Educational establishments | Academic years 1980/1 | 1985/6 | 1987/8 | Dynamics 1980/1 = 100 | |
|---|---|---|---|---|---|
| Unified Secondary Polytechnical Schools | 1092299 | 1244396 | 1260042 | 114 | 115 |
| Vocational/technical schools | 1514 | 1461 | 1343 | 96 | 88 |
| Secondary vocational/technical schools | 149686 | 114036 | 106564 | 76 | 71 |
| Vocational schools | 97575 | 95651 | 115036 | 98 | 118 |
| Vocational schools post-secondary education | - | - | 4671 | - | - |
| Schools for the handicapped | 17420 | 16947 | 16764 | 97 | 96 |
| Colleges | 14024 | 9536 | 11019 | 68 | 79 |
| Higher educational establishments | 85330 | 101507 | 116407 | 119 | 136 |
| **Total** | 1457848 | 1583534 | 1631846 | 109 | 112 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 398.

Table 2

PUPILS AT UNIFIED SECONDARY POLYTECHNICAL SCHOOLS

| | Academic years 1980/81 | 1986/86 | 1987/88 | Dynamics 1980/81 = 100 | |
|---|---|---|---|---|---|
| 1st-3rd class | 392374 | 429912 | 412520 | 110 | 105 |
| 4th-8th class | 602836 | 651067 | 679677 | 108 | 113 |
| incl.evening | 1192 | 1074 | 1108 | 90 | 93 |
| 9th-12th class | 97089 | 163417 | 167845 | 168 | 173 |
| incl.evening | 5226 | 3494 | 3688 | 67 | 71 |
| Total | 1092299 | 1244396 | 1260042 | 114 | 115 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 400.

**Table 3**

LEARNERS AND LEAVERS OF EDUCATIONAL/VOCATIONAL CENTRES OF UNIFIED SECONDARY POLYTECHNICAL SCHOOLS

| Vocational fields | 1983/84 | | 1986/87 | | 1987/88 | |
|---|---|---|---|---|---|---|
| | learners | leavers | learners | leavers | learners | leavers |
| Mining | 159 | 138 | 140 | 97 | 156 | 93 |
| Metalworking | 119 | 113 | 146 | 129 | 106 | 184 |
| Energy | 113 | 112 | 271 | 202 | 146 | 169 |
| Mechanical engineering | 5650 | 5391 | 8804 | 7337 | 8534 | 7422 |
| Electrical engineering and electronics | 3586 | 3447 | 6504 | 5921 | 10561 | 3046 |
| Transport | 2089 | 1929 | 2387 | 2739 | 3247 | 962 |
| Chemical industry | 1985 | 1881 | 2474 | 2245 | 3222 | 1632 |
| Construction | 1380 | 1322 | 2295 | 1791 | 2223 | 1920 |
| Agriculture | 1769 | 1604 | 2136 | 2118 | 2648 | 1254 |
| Forestry and wood-processing | 829 | 791 | 1562 | 1378 | 1621 | 1394 |
| Food, wine and tobacco industries | 1386 | 1290 | 2615 | 2181 | 3007 | 2713 |
| Light industry | 4473 | 4228 | 7188 | 6563 | 7079 | 7224 |
| Trade, public catering and services | 6948 | 6803 | 8205 | 7305 | 8462 | 7103 |
| Health services | 392 | 211 | 1962 | 609 | 2627 | 897 |
| Pedagogical specialists | 142 | 132 | 842 | 600 | 1488 | 884 |
| Management and administration | 897 | 859 | 850 | 807 | 859 | 823 |
| Total | 31917 | 30251 | 49174 | 42828 | 56313 | 38430 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 401.

Table 4

LEARNERS IN REGULAR COURSES AT VOCATIONAL SCHOOLS

| Vocational fields | Academic years | | | Dynamics | |
|---|---|---|---|---|---|
| | 1980/81 | 1985/86 | 1987/88 | 1980/81 = 100 | |
| Geology and exploration | 228 | 215 | 312 | 94 | 137 |
| Mining | 1476 | 1988 | 2412 | 135 | 163 |
| Energy | 4963 | 3265 | 3718 | 66 | 75 |
| Metalworking | 1104 | 1464 | 1473 | 133 | 133 |
| Mechanical and appliance engineering | 20331 | 15753 | 17136 | 77 | 84 |
| Electrical engineering and electronics | 5048 | 8898 | 13259 | 176 | 263 |
| Chemical technologies | 2557 | 3195 | 4456 | 125 | 174 |
| Technology of construction and fireproof materials | 591 | 109 | 106 | 18 | 18 |
| Food, wine and tobacco industries | 2791 | 3159 | 3176 | 113 | 114 |
| Forestry and wood industry | 886 | 2227 | 2229 | 251 | 251 |
| Light industry | - | 2550 | 3200 | - | - |
| Leather and shoe industry | 365 | 82 | - | 22 | - |
| Polygraphic industry | 427 | 580 | 845 | 136 | 198 |
| Transport | 1823 | 3089 | 4755 | 169 | 261 |
| Construction | 4135 | 3525 | 4869 | 85 | 118 |
| Mechanization and electrification of agriculture | 3033 | 2409 | 2580 | 79 | 85 |
| Agriculture | 4205 | 4465 | 5147 | 106 | 122 |
| Economics | 9661 | 6633 | 6646 | 69 | 70 |
| Health services | 2047 | 4145 | 5083 | 202 | 248 |
| Physical culture | 398 | 138 | - | 35 | - |
| Public services | 102 | - | - | - | - |
| Total | 70182 | 67889 | 81402 | 97 | 116 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 407.

Table 5

REGULAR GRADUATES OF VOCATIONAL SCHOOLS

| Vocational fields | Academic years | | | Dynamics | |
|---|---|---|---|---|---|
| | 1980/81 | 1985/86 | 1987/88 | 1980/81 = 100 | |
| Geology and exploration | 57 | 67 | 64 | 117 | 112 |
| Mining | 366 | 537 | 543 | 147 | 148 |
| Energy | 1185 | 752 | 646 | 63 | 54 |
| Metalworking | 171 | 277 | 316 | 162 | 185 |
| Mechanical and appliance engineering | 4851 | 3565 | 3643 | 73 | 75 |
| Electrical engineering and electronics | 1390 | 1724 | 2289 | 124 | 165 |
| Chemical technologies | 818 | 658 | 579 | 80 | 71 |
| Technology of construction and fireproof ceramics | 174 | 22 | 23 | 13 | 13 |
| Food, wine and tobacco industries | 851 | 726 | 780 | 85 | 92 |
| Forestry and wood industry | 247 | 550 | 554 | 223 | 224 |
| Light industry | - | 563 | 590 | - | - |
| Polygraphic industry | 111 | 97 | 90 | 87 | 81 |
| Transport | 487 | 675 | 1085 | 139 | 223 |
| Construction | 1628 | 947 | 898 | 58 | 55 |
| Mechanization and electrification of agriculture | 787 | 614 | 571 | 78 | 73 |
| Agriculture | 1291 | 1109 | 1217 | 86 | 94 |
| Economics | 3024 | 1946 | 1629 | 64 | 54 |
| Health services | 18 | 2067 | 1557 | 115x | 86x |
| Physical culture | - | 80 | 51 | - | - |
| Public services | 42 | 97 | - | 231 | - |
| Total | 18729 | 16976 | 17125 | 91 | 91 |

Table 6

REGULAR LEARNERS AT SECONDARY VOCATIONAL/TECHNICAL SCHOOLS

| Educational field | Academic years | | | Dynamics | |
|---|---|---|---|---|---|
| | 1980/81* | 1985/86 | 1987/88 | 1980/81 = 100 | |
| Mining | 1095 | 1543 | 1325 | 141 | 121 |
| Energy | 3174 | 758 | 586 | 24 | 18 |
| Metalworking | 723 | 295 | 261 | 41 | 36 |
| Mechan. engineering | 32583 | 28147 | 25902 | 86 | 89 |
| Electrical engineering and electronics | 7871 | 10985 | 10591 | 140 | 135 |
| Chemical industry | 4792 | 3602 | 3045 | 75 | 63 |
| Forestry and wood industry | 4669 | 4207 | 4391 | 90 | 94 |
| Polygraphic industry | 400 | 104 | - | 26 | - |
| Food, wine and tobacco industries | 4858 | 4898 | 4417 | 101 | 91 |
| Light industry | - | 12708 | 11795 | - | - |
| Trade, catering, services | 9295 | 7956 | 8022 | 86 | 86 |
| Transport | 15402 | 14223 | 13324 | 92 | 86 |
| Construction | 15553 | 8595 | 7600 | 55 | 49 |
| Agriculture | 18499 | 13104 | 12628 | 71 | 68 |
| Economics, management, administration | 6661 | 1295 | 1568 | 19 | 23 |
| Tourism and recreation | - | 792 | - | - | - |
| Total | 148446 | 113212 | 105455 | 76 | 71 |

* The difference between the sum total and the specialities presented is due to the lack of data for some groups of specialities which have been removed from the vocational training system.

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 405.

**Table 7**

THOSE LEAVING SECONDARY VOCATIONAL/TECHNICAL SCHOOLS ACCORDING TO SPECIALIZED FIELDS

| Specialized fields | 1980 | 1985 | 1987 | Dynamics 1980/81 = 100 | |
|---|---|---|---|---|---|
| Mining | 357 | 415 | 481 | 116 | 135 |
| Energy | 1022 | 204 | 176 | 20 | 17 |
| Metalworking | 172 | 50 | 123 | 29 | 71 |
| Mechanical engineering | 8759 | 7809 | 8962 | 89 | 102 |
| Electric engineering and electronics | 2845 | 3293 | 3614 | 116 | 127 |
| Chemical industry | 1134 | 1213 | 1151 | 107 | 101 |
| Forestry and wood industry | 116 | 1157 | 1359 | 697 | 819 |
| Polygraphic industry | 109 | 82 | - | 75 | - |
| Food, wine and tobacco industries | 1097 | 1292 | 1346 | 118 | 123 |
| Trade, public catering and services | 2381 | 3155 | 2864 | 132 | 120 |
| Transport | 4204 | 4734 | 4380 | 113 | 104 |
| Construction | 4271 | 2082 | 2436 | 49 | 57 |
| Agriculture | 4881 | 3778 | 4028 | 77 | 82 |
| Economics, management and administration | 2149 | 387 | 505 | 18 | 23 |
| Tourism and recreation | - | 207 | - | - | - |
| Total | 40240 | 33670 | 35278 | 84 | 88 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 405.

Table 8

LEARNERS AT VOCATIONAL/TECHNICAL SCHOOLS
ACCORDING TO EDUCATIONAL FIELDS

| Educational field | Academic years | | | Dynamics | |
|---|---|---|---|---|---|
| | 1980/81 | 1985/86 | 1987/88 | 1980/81 = 100 | |
| Mechanical engineering | - | 44 | 23 | - | - |
| Electrical engineering and electronics | 50 | 75 | 117 | 150 | 234 |
| Forestry and wood-processing | 26 | 38 | 41 | 146 | 158 |
| Light industry | 71 | 157 | 85 | 221 | 120 |
| Trade, catering, services | 21 | 12 | 79 | 57 | 376 |
| Construction | 751 | 446 | 476 | 59 | 63 |
| Agriculture | 595 | 689 | 522 | 116 | 88 |
| Total | 1514 | 1461 | 1343 | 96 | 89 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 403.

**Table 9**

EXTRAMURAL LEARNERS AT VOCATIONAL SCHOOLS

| Educational fields | Academic years | | | Dynamics 1980/81= | |
|---|---|---|---|---|---|
| | 1980/81 | 1985/86 | 1987/88 | 1985/86 | 1987/8 |
| Mining | 473 | 372 | 755 | 79 | 160 |
| Energy | 1677 | 1174 | 1334 | 70 | 80 |
| Metalworking | 55 | 77 | 102 | 140 | 185 |
| Mechanical and appliance engineering | 4423 | 3934 | 4282 | 89 | 97 |
| Electrical engineering and electronics | 935 | 1831 | 2741 | 196 | 293 |
| Chemical technologies | 868 | 1094 | 1532 | 126 | 176 |
| Food, wine and tobacco industries | 312 | 116 | 191 | 37 | 61 |
| Forestry and food industry | 117 | 121 | 110 | 103 | 94 |
| Light industry | - | 1233 | 1140 | - | - |
| Leather and shoe industry | 93 | - | 129 | - | 139 |
| Polygraphic industry | 228 | 286 | 280 | 125 | 123 |
| Transport | 469 | 639 | 1207 | 136 | 257 |
| Construction | 777 | 981 | 1343 | 126 | 173 |
| Mechanization and electrification of agriculture | 75 | 87 | 77 | 116 | 103 |
| Agriculture | 381 | 140 | 162 | 37 | 43 |
| Economics | 1782 | 3362 | 4809 | 189 | 270 |
| Public services | 25 | - | - | - | - |
| Total | 13657 | 15447 | 20194 | 113 | 148 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 407.

**Table 10**

THOSE LEAVING EXTRAMURAL COURSES AT VOCATIONAL SCHOOLS

| Educational field | Academic Years | | | Dynamics | |
|---|---|---|---|---|---|
| | 1980 | 1985 | 1987 | 1985 | 1987 |
| Mining and geology | 119 | 114 | 142 | 96 | 115 |
| Energy | 439 | 381 | 243 | 87 | 55 |
| Metalworking | 7 | 8 | 10 | 114 | 143 |
| Mechanical and appliance engineering | 1003 | 925 | 876 | 92 | 87 |
| Electrical engineering and electronics | 190 | 397 | 402 | 209 | 212 |
| Chemical technologies | 96 | 300 | 310 | 312 | 323 |
| Food, wine and tobacco industries | 93 | 33 | 22 | 35 | 25 |
| Forestry and wood industry | 26 | 18 | 22 | 69 | 85 |
| Light industry | - | 248 | 404 | - | - |
| Polygraphic industry | 75 | 130 | 134 | 173 | 179 |
| Transport | 98 | 112 | 218 | 114 | 222 |
| Construction | 211 | 165 | 221 | 78 | 105 |
| Mechanization and electrification of agriculture | 40 | 11 | 14 | 27 | 35 |
| Agriculture | 114 | 29 | 22 | 25 | 19 |
| Economics | 845 | 891 | 1483 | 105 | 175 |
| Total | 3356 | 3762 | 4523 | 112 | 135 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 408.

**Table 11**

LEARNERS AT EVENING VOCATIONAL SCHOOLS

| Vocational field | Academic years | | | Dynamics 1980/1 = 100 | |
|---|---|---|---|---|---|
| | 1980/81 | 1985/86 | 1987/88 | 1985/6 | 1987/8 |
| Energy | 1701 | 1025 | 1126 | 60 | 66 |
| Mechanical and appliance engineering | 5016 | 3546 | 3635 | 71 | 72 |
| Electrical engineering and electronics | 955 | 1554 | 1803 | 163 | 189 |
| Transport | 352 | 483 | 1155 | 137 | 328 |
| Construction | 755 | 883 | 834 | 117 | 110 |
| Economics | 695 | 814 | 1248 | 117 | 180 |
| Geology and mining | - | 257 | 72 | - | - |
| Metalworking | - | 60 | 60 | - | - |
| Light industry | - | - | 80 | - | - |
| Total | 9474 | 8622 | 10013 | 91 | 106 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 407.

**Table 12**

VOCATIONAL SCHOOL LEAVERS

| Vocational field | Academic years | | | Dynamics 1980/1=100 | |
|---|---|---|---|---|---|
| | 1980 | 1985 | 1987 | 1985 | 1987 |
| Mining | 41 | 47 | 21 | 115 | 51 |
| Energy | 431 | 307 | 194 | 71 | 45 |
| Mechanical and appliance engineering | 1565 | 900 | 681 | 57 | 43 |
| Electrical engineering and electronics | 289 | 320 | 356 | 111 | 123 |
| Transport | 51 | 135 | 206 | 265 | 404 |
| Construction | 273 | 240 | 189 | 88 | 69 |
| Economics | 289 | 269 | 306 | 93 | 106 |
| Metalworking | - | - | 13 | - | - |
| Total | 2939 | 2218 | 1966 | 75 | 67 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 408.

Table 13

EXTRAMURAL LEARNERS AT
SECONDARY VOCATIONAL/TECHNICAL SCHOOLS

| Educational field | Academic year | | | Dynamics | |
|---|---|---|---|---|---|
| | 1980/81[x] | 1985/86 | 1987/88 | 1980 = 100 | |
| | | | | 1985/86 | 1987/ |
| Energy | 61 | - | - | - | - |
| Mechanical engineering | 181 | 181 | 203 | 100 | 112 |
| Electrical engineering and electronics | 144 | - | 97 | - | 67 |
| Light industry | - | 49 | 85 | - | - |
| Trade, catering, services | 67 | 111 | 290 | 166 | 433 |
| Transport | 4 | 39 | 88 | 975 | 22[x] |
| Agriculture | 118 | 123 | 87 | 104 | 74 |
| Total | 762[x] | 670[x] | 850 | 88 | 112 |

[x] The subtotal includes extramural learners in the following fields: chemical industry (in 1985-86 only - 100 people); forestry (in 1985-86 only - 4 people) and food, wine and tobacco industries (in 1980-81 - one person whereas 1985-86 - 55 people).

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 405.

Table 14.

WORKER LEARNERS IN ENTERPRISE-BASED COURSES

| | 1980/81 | 1985/86 | 1987/88 | Dynamics 1980/81=10 | |
|---|---|---|---|---|---|
| | | | | 1985/86 | 1987/8 |
| Classes (total) | 1234 | 1440 | 1477 | 117 | 120 |
| Students in Group I | 38 | 24 | 12 | 63 | 32 |
| Women | 6 | 3 | 4 | 50 | 67 |
| Students in Group II-a | 4444 | 454 | 358 | 102 | 81 |
| Women | 41 | 55 | 58 | 134 | 137 |
| Students in Group II-b | 375 | 422 | 335 | 112 | 89 |
| Women | 51 | 80 | 66 | 157 | 129 |
| Students in Group IV-a | 19586 | 23255 | 22720 | 119 | 116 |
| Women | 9133 | 11327 | 11564 | 124 | 127 |
| Students in Group IV-b | 133 | 255 | 278 | 192 | 209 |
| Women | 84 | 114 | 136 | 136 | 162 |
| Students. TOTAL | 20567 | 24410 | 23703 | 119 | 115 |
| Women | 9315 | 11579 | 11826 | 124 | 127 |
| Academic year passes TOTAL | 15625 | 15442 | 18378 | 99 | 118 |
| No. of certificates awarded (successful completion of a given educational level) TOTAL | 7909 | 7891 | 8599 | 100 | 109 |
| Incl.: Group I | 23 | - | 2 | - | - |
| Group II-a | 356 | 212 | 171 | 60 | 48 |
| Group II-b | 345 | 311 | 350 | 57 | 64 |
| Group IV-a | 6818 | 7178 | 7895 | 105 | 116 |
| Group IV-b | 153 | 190 | 181 | 124 | 118 |

Source: Statistical Publication "Vocational Education in the People's Republic of Bulgaria", 1981,1986,1988, pp. 238, 230, 242

**Table 15**

WORKERS PARTICIPATING IN VOCATIONAL SCHEMES ACCORDING TO SECTOR

| Sectors | Years | | | Dynamics 1980-100 | |
|---|---|---|---|---|---|
| | 1980 | 1985 | 1987 | 1985 | 1987 |
| Industry | 424718 | 452218 | 456634 | 106 | 107 |
| Construction | 86459 | 103688 | 97733 | 120 | 113 |
| Agriculture | 182402 | 166276 | 158065 | 91 | 87 |
| Forestry | 2501 | 529 | 1180 | 21 | 47 |
| Transport | 140568 | 141393 | 157502 | 101 | 112 |
| Communications | 16922 | 18140 | 17536 | 107 | 104 |
| Trade, material and technical supply | 61476 | 66636 | 87813 | 108 | 143 |
| Housing and public economy, etc. | 10993 | 9211 | 9595 | 84 | 87 |
| Total | 916947 | 938446 | 981766 | 102 | 107 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 123.

Table 16

STUDENTS IN REGULAR COURSES AT ESTABLISHMENTS OF HIGHER EDUCATION

| Vocational field | Years | | | Dynamics 1980-100 | |
|---|---|---|---|---|---|
| | 1980/81 | 1985/86 | 1987/88 | 1985/6 | 1987/8 |
| 1. Engineering/ technical | 24859 | 30993 | 34411 | 125 | 138 |
| 2.Forestry and agriculture | 3096 | 4808 | 5188 | 155 | 168 |
| 3. Economics | 9109 | 10520 | 11579 | 115 | 127 |
| 4.University and pedagogical | 14260 | 18024 | 21688 | 126 | 152 |
| 5.Health service | 11912 | 12528 | 11566 | 105 | 97 |
| 6.Arts | 2607 | 79252 | 3298 | 120 | 132 |
| Total | 65843 | 79252 | 71128 | 120 | 132 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 412.

Table 17

REGULAR GRADUATES OF HIGHER EDUCATIONAL ESTABLISHMENTS

| Vocational fields | Years | | | Dynamics 1980-100 | |
|---|---|---|---|---|---|
| | 1980 | 1985 | 1987 | 1985 | 1987 |
| Engineering/ technical | 5932 | 3996 | 4876 | 67 | 82 |
| Forestry and agriculture | 455 | 619 | 753 | 136 | 165 |
| Economics | 2394 | 1698 | 1724 | 71 | 72 |
| University and pedagogical | 3603 | 3056 | 3370 | 85 | 94 |
| Health service | 1920 | 1827 | 1681 | 95 | 87 |
| Arts | 444 | 496 | 337 | 112 | 76 |
| Total | 14748 | 11692 | 12750 | 79 | 86 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 414.

Table 18

EXTRAMURAL STUDENTS IN
HIGHER EDUCATIONAL ESTABLISHMENTS

| Vocational field | Academic year | | | Dynamics 1980/1 = 100 | |
|---|---|---|---|---|---|
| | 1980/1 | 1985/6 | 1987/8 | 1985/6 | 1987/8 |
| Engineering/ technical | 5200 | 4852 | 7257 | 93 | 140 |
| Forestry and agriculture | 719 | 885 | 1024 | 123 | 142 |
| Economics | 5053 | 4804 | 5805 | 95 | 115 |
| University and pedagogical | 7706 | 11464 | 14881 | 149 | 193 |
| Health service | 306 | 11 | - | 4 | - |
| Arts | 503 | 239 | 320 | 48 | 64 |
| Total | 19487 | 22255 | 28187 | 148 | 150 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 412.

Table 19

EXTRAMURAL GRADUATES FROM
HIGHER EDUCATIONAL ESTABLISHMENTS

| Vocational field | Academic year | | | Dynamics 1980/81 = 100 | |
|---|---|---|---|---|---|
| | 1980 | 1985 | 1985 | 1985/86 | 1987/88 |
| Engineering/ technical | 1346 | 639 | 628 | 47 | 47 |
| Forestry and agriculture | 136 | 166 | 154 | 122 | 113 |
| Economics | 1181 | 676 | 602 | 57 | 51 |
| University and pedagogical | 1598 | 1648 | 2123 | 103 | 133 |
| Health service | 58 | 46 | - | 79 | - |
| Arts | 100 | 65 | 6 | 65 | 6 |
| Total | 4419 | 3240 | 3513 | 73 | 79 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 414.

Table 20

COLLEGE STUDENTS ACCORDING TO TYPES OF INSTITUTE

| Types of institute | Years | | | Dynamics 1980-100 | |
|---|---|---|---|---|---|
| | 1980/81 | 1985/86 | 1987/88 | 1985/86 | 1987/88 |
| Teacher training | 7609 | 7024 | 8187 | 92 | 106 |
| Communication | 981 | 1109 | 1152 | 113 | 117 |
| Librarianship | 516 | 468 | 576 | 91 | 112 |
| International tourism | 963 | 925 | 1113 | 96 | 116 |
| Educational personnel | 494 | | | | |
| Music and choreography | 200 | | | | |
| Medicine | 3141 | | | | |
| Pop singers | 120 | | | | |
| Total | 14024 | 9536 | 11019 | 68 | 79 |

Source: Statistical Yearbook of PR Bulgaria, 1988, p. 410

Table 21

COLLEGE GRADUATES ACCORDING TO TYPES OF INSTITUTE

| Types of institute | Years | | | Dynamics 1980-100 | |
|---|---|---|---|---|---|
| | 1980 | 1985 | 1987 | 1985 | 1987 |
| Teacher training | 4360 | 3115 | 2964 | 71 | 68 |
| Communication | 241 | 236 | 260 | 98 | 108 |
| Librarianship | 215 | 192 | 144 | 89 | 67 |
| International tourism | 341 | 273 | 340 | 80 | 100 |
| Educational personnel | 254 | | | | |
| Music and choreography | 83 | 57 | | | |
| Medicine | 3400 | | | | |
| Pop singers | 46 | 21 | | | |
| Total | 8940 | 3894 | 3708 | 43 | 41 |

Source: Statistical Yearbook of PR Bulgaria. 1988. p. 410

CEDEFOP — European Centre for the Development of Vocational Training

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Michael J. Stefanov

*CEDEFOP Document*

Luxembourg: Office for Official Publications of the European Communities

1990 — X, 112 pp. — 21.0 × 29.7 cm

EN

ISBN 92-826-1133-7

Catalogue number: HX-58-90-126-EN-C

Price (excluding VAT) in Luxembourg: ECU 7

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Jean Monnet House, Bundesallee 22, **D-1000 Berlin 15**
Tel. (030) 88 41 20; Telex 184 163 eucen d; Telefax (030) 88 41 22 22

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Catalogue number: HX-58-90-126-EN-C

Price (excluding VAT) in Luxembourg: **ECU 7**

ISBN 92-826-1133-7

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